the Board of Directors of Glendale Stock Farms.

Mr. W. S. Stevens was engaged in the mercantile and ranching business for many years, before his arrival in the Salt River Valley in 1913. Dwight B. Heard Investment Company employed his services until 1916 in relation to development and real estate transactions. From 1916 until the present time, he has been engaged in ranching, especially in the production of cotton. These various operations were conducted in the Salt River Valley; Imperial Valley on the Mexican Side; Palo Verde Valley, near Blythe, California; and near the Gila River, Southwest of Phoenix. His general practice being the operation of several thousand acres annually; He was one of the original organizers of Co-operative Cotton Marketing Associations in Arizona, and served on the original committee in perfecting the South Wide Cotton Organization; He has served on the Executive Committee of the National Cotton Growers Exchange.

Mr. Burns was formerly a banker and was also engaged in the abstract and loan business in North Dakota. He came to Arizona in 1911 because of poor health, and engaged in the insurance business. Later he engaged in real estate, insurance and loan business and is now a member of the firm of Block and Burns. He was a member of the Sixth Arizona Legislature in 1923 and at present is head of the Knights of Columbus of Arizona, and State Secretary of the Arizona Colorado River Association. He has entirely regained his health and is active in many progressive enterprises.

All of these men are successful business men and are very influential in the community. They are identified prominently in church and civic affairs, have the confidence and good will of the people throughout Maricopa County, and undoubtedly will be very material factors in establishing a sound conservative operation policy for the District.

LANDOWNERSHIP

The landowners of Roosevelt Irrigation District consist principally of successful farmers in nearby projects who are thoroughly familiar with local conditions. A very large majority of these men will reside within the District and are financially able to rapidly develop their lands. Practically none of the land is held by speculators. A thorough investigation of this phase shows that the District is exceptionally fortunate in this respect. There are approximately 200 different landowners in the District, the average holding being 184 acres. The number of landowners is rapidly increasing as shown by the fact that there has been a large increase during the last year.

POLITICAL STATUS OF DISTRICT

In 1921, prior to the formation of the Roosevelt Irrigation District, negotiations were entered into between the Salt River Valley Water Users' Association and the Carrick & Mangham Agua Fria Land and Irrigation Company, which at that time was the owner of extensive tracts of land

within the present boundaries of the Irrigation District and a contract was executed given to Carrick & Mangham the right to obtain a water supply from the water bearing area within the Salt River Project. Subsequently the Roosevelt Irrigation District was formed and all of the rights obtaining under the Carrick & Mangham contract were assigned to the Irrigation District. For the purposes of the District, however, it was necessary that the contract be modified and amplified, and accordingly a supplemental contract between District and Salt River Valley Water Users' Association was executed on February 3, 1927 and on February 12, 1927 was approved by the Secretary of the Interior, thus becoming finally effective.

The so-called Carrick & Mangham 1921 contract provided for the payment by District to Association of $300,000 in cash for the construction of an auxiliary steam-driven electrical generating plant, and for other payments which have since been found unnecessary. The original plans formulated by District contemplated the construction of a system which would, at its inception, include the cement lining of all canals and other features which time has shown are at present unnecessary and inadvisable. The original plan also contemplated the construction of the entire system at one time, which admittedly is not economically feasible.

As has been explained, a modification has been made in these plans, but as they were the governing conditions at the inception of the financing program, it was deemed expedient, in order to save time, and because the amended contract had not as yet been officially executed, to secure the approval of $3,065,000

of bonds, which amount was the estimated cost of the system contemplated at that time. This approval was obtained from the State Certification Board, consisting of the State Engineer, Attorney General and Superintendent of Banks, in accordance with the Irrigation District Act, and subsequently an election was called and the voters passed the bond issue by a very large majority; as a matter of fact there were only three votes against the issue.

Because of the new terms and conditions of the amended contract with the Water Users' Association, and the revision of the design of the system and construction program, it has been possible to materially reduce the capital costs per acre for the completed system. At the present time it is proposed to issue and sell only a sufficient amount of bonds to complete the first unit of the system in order that the land owners within the District will not be burdened at the outset with the much higher charges which would obtain if the entire system were constructed at this time. To facilitate both financing and operation, the construction program has been divided into three distinct construction periods and the tentative consent of the Certification Board of Arizona to proceed under the revised plan has been obtained. The only remaining acts necessary to consummate the issuance and sale of the bonds for the initial construction work are the final certification by the State Certification Board and the advertising of the sale of the bonds. Steps are now being taken to immediately complete these phases and it is expected that the bonds will actually issue by May 1 to 10, 1927. In other words, all of the difficulties and uncertainties have been eliminated and it is now only a process of law and routine.

STATUS OF DISTRICT
WITH RELATION TO
SALT RIVER VALLEY WATER USERS' ASSOCIATION

The contract previously mentioned which has been entered into between Roosevelt Irrigation District and Salt River Valley Water Users' Association, provides for an ample supply of water for the irrigation of District's lands. The waters are to be obtained from an extensive underground reservoir located in the Salt River Valley which is replenished from the underflow of the Salt, Gila, New and Agua Fria Rivers, Cave Creek and other lateral streams, as well as by the seepage water from the canals and laterals of the Salt River Project and percolating irrigation waters.

The Salt River Valley Water Users' Association operates under the terms of a contract with the Federal Government, and obtains its water supply from Roosevelt Lake and the flow of the Salt River, regulated and controlled by a series of impounding reservoirs, augmented by the uncontrolled flow of the Verde River. The Association project embraces approximately 240,000 acres and is known generally as the Salt River Project. Its water supply is abundant, and because of extensive irrigation within its boundaries and the irrigation of other nearby areas, the rise of the ground water levels has been constant, The Salt River Project thus is faced with a drainage problem to prevent damage from water-logging to certain of the lands

within its boundaries.

MUTUAL BENEFITS OF CONTRACTS

History and geologic studies show that even prior to the advent of irrigation, the area in question was underlain by a very extensive underground reservoir, and water stood within twenty to fifty feet of the surface, depending upon the locality. The Salt River Valley Water Users' Association took measures to relieve this situation and were pioneers in the drainage of the land by pumping from wells advantageously located, thus lowering the water plane, preventing water-logging of the land and the accumulation of injurious chemicals within the root zones of the various crops. Obviously, to install the wells, pump plants, drainage ditches, etc., which would efficiently drain this area, enormous capital expenditures were necessary and the attendent operating expenses for electrical energy, maintenance, etc., were large. As operations proceeded the costs of this drainage system undoubtedly reached an annual expense in excess of $100,000, and at that the Association was faced with the necessity of installing additional facilities unless relief by other means could be obtained.

AMENDED CONTRACT APPLICABLE TO DISTRICT

The amended contract contains a declaration on the part of Salt River Valley Water Users' Association to the effect that due to the fact that use of electrical energy for pumping water for the Roosevelt Irrigation District as provided

therein, dewaters and benefits the lands of the Salt River project, and that this operation would otherwise have to be carried on at great expense by the Association, this use is on a parity, in point of priority of supply, with the Association's project uses. As the original contract was executed in 1921, the Roosevelt Irrigation District contract has a prior right to power over all similar subsequent contracts, thus giving the Roosevelt Irrigation District an absolute assurance of an adequate power supply at exceptionally low rates. This gives District a right to power prior to Roosevelt Conservation District, Electrical District No. 2 (Casa Grande) and many other power consumers. A list of those consumers which have a right to power prior to that of the Irrigation District will be found in Exhibit "A" of the Amended Contract, which is a part of Appendix "A" attached to this report. A study of the power available from the electrical production works of Association shows that Irrigation District will have a prior call upon production facilities which will yield approximately 28,000 kilowatts. This amount is many times District's maximum requirements. In other words, District has acquired a very valuable right and an assured water and power supply from the Association.

Attention is directed to the fact that the Carrick and Mangham contract was passed upon by the Arizona Supreme Court in the case of Brewster vs. Salt River Valley Water Users' Association (27 Arizona 23) and was upheld in every respect.

TERMS OF CONTRACTS

Under the terms of these agreements, District is given the right to pump all of the water it may required from an area some 90,000 acres in extent, bounded generally by the Salt River on the south, Agua Fria on the west, and a line extending in a northwesterly and southeasterly direction passing through the city of Phoenix. This area is so situated that it is possible, once the water is pumped to the surface, to irrigate the entire area of the Roosevelt District by gravity.

Copies of the contracts under which the Roosevelt Irrigation District will operate, marked "Appendix A" and "Appendix B" are attached to this report and reference is made thereto for more complete detail of the agreement. It appears desirable to set out a brief summary of the salient features of these contracts at this point for ready reference.

1.--District acquires the exclusive right to sink wells, unlimited in number, within certain described areas of the Salt River Project, and to convey water pumped therefrom to lands of District.

2.--Association releases to the use of District all waters that may flow to the ends of the canals within the above mentioned certain described areas at a purchase price of 75 cents per acre foot.

3.--A certain minimum amount of water must be pumped by District as specified by Association. There is no minimum requirement for a period of ten years; thereafter 85,000 acre feet per annum must be pumped.

4.--District agrees to purchase and Association to sell 26 of its existing wells and pumping

plants and provisions are made for the sinking and equiping of additional wells by District. No limitation is placed on the number of wells which the District may drill if and when it desires.

5.--The contract provides for the purchase of electric energy at 3/4 cent per K.W.H. by District from Association for the operation of the pumping plants and for the payment to Association by District of certain costs in connection with changes to be made in the existing electric power distribution system of Association which will be necessary for the operation of the existing and proposed additional District plants.

6.--The agreement provides for co-operation and assistance of Association in securing for District rights-of-way for pumping plants and collection canals.

7.--District agrees to properly maintain and keep in good state of repair all canal systems, wells, pumping plants and other District property appurtenant thereto within the Salt River Project.

COMPARATIVE POWER COSTS

Association contracts to supply District with all of the electrical energy needed for pumping purposes at rates very advantageous to District, and which will make the cost very reasonable. The rate for electrical energy is 3/4 cent per K.W.H., whereas the rates charged for electrical energy in nearby projects are as follows:

Roosevelt Water Conservation District*	1.45 cents per KWH
Electrical District No. 2 (Casa Grande)	1.55 cents per KWH
Southwest Cotton Company (Litchfield)	1.50 cents per KWH
Latham Ranch and ranches in the vicinity of District	1.50 cents per KWH

*May be decreased by payments in advance.

PHYSICAL CONDITIONS OF PROJECT

PROPOSED LAYOUT

The source of water supply for the Roosevelt Irrigation District is the extension underground water bearing area in the southwesterly portion of the Salt River project which lies across the Agua Fria River from Roosevelt District and contiguous thereto at its easterly end. The contracts which have been executed with the Salt River Valley Water Users' Association provide that the District shall have the right to pump water from this area, which comprises some 90,000 acres lying north of the Gila River and between Phoenix and the Agua Fria River, also the right to the use of certain surface drainage waters which are readily available to it. Water will be extracted from this underground area by pumping from wells with electrically driven pumps, the electrical energy being obtained under the terms of the above mentioned contracts. Under the terms of the contract, twenty-six of these wells and pumping plants are obtained by purchase from the Association, together with the right to install additional wells and pumping plants, unlimited in number, as needed. From these wells water will be discharged into small ditches and thereby transmitted to main canals. These main canals will transport the water to the Agua Fria River crossing. All of the canals in this water production area are herein termed collection canals. A bridge will be

SAN FRANCISCO
908 BALBOA BLDG.
EPHONE DOUGLAS 1806

LOS ANGELES
1116 EDWARDS & WILDEY BLDG.
TELEPHONE VANDYKE 7150

THE LOVELAND ENGINEERS, INC.

ESTER H. LOVELAND
F. M. FAUDE
C. I. RHODES
M. E. READY
A. N. JOHNS
M. I. REED
L. A. WILLIAMSON
X. MARTIN SMITH
G. H. BENJAMIN

DESIGN
CONSTRUCTION
MANAGEMENT
ORGANIZATION
FINANCING
ACCOUNTING

SPECIAL REPORTS
PUBLIC UTILITIES COMMISSIONS
BOND HOUSES, BANKS

WATER SUPPLY
IRRIGATION
RECLAMATION
TELEPHONE
POWER
RAILROADS

SAN FRANCISCO OFFICE

February, 1927.

ECONOMIC FEATURES AND POTENTIAL DEVELOPMENT VALUES

OF THE

ROOSEVELT IRRIGATION DISTRICT

February---1927

In presenting this discussion of the economic features of Roosevelt Irrigation District, we proceed on the theory that the elements herein contained will be of outstanding importance more particularly to those interests who will analyze and assume the responsibilities of financing this project.

From the standpoint of the farmer, the agricultural possibilities are readily demonstrated by studies of soil, climate, etc., as well as by comparison with adjacent areas similarly situated which are in successful operation. From the standpoint of water supply, soils, engineering design and construction, the project has been investigated

constructed to support a metal flume of adequate capacity to transport this water supply across the Agua Fria River. From the west bank of the Agua Fria the main transmission canal of the District will extend to and along the northerly boundary of the District for its entire length. Laterals will take off therefrom at intervals of approximately one mile throughout the entire length of this canal. These laterals will extend in a southerly direction, along section lines where feasible, and will deliver water to the corner of highest elevation of each quarter section. This system of canals and laterals will best be understood by reference to the following map which delineates the water production or so-called collection area, the location of the existing and proposed wells, the collection canals, the Agua Fria crossing and the District's main transmission canal.

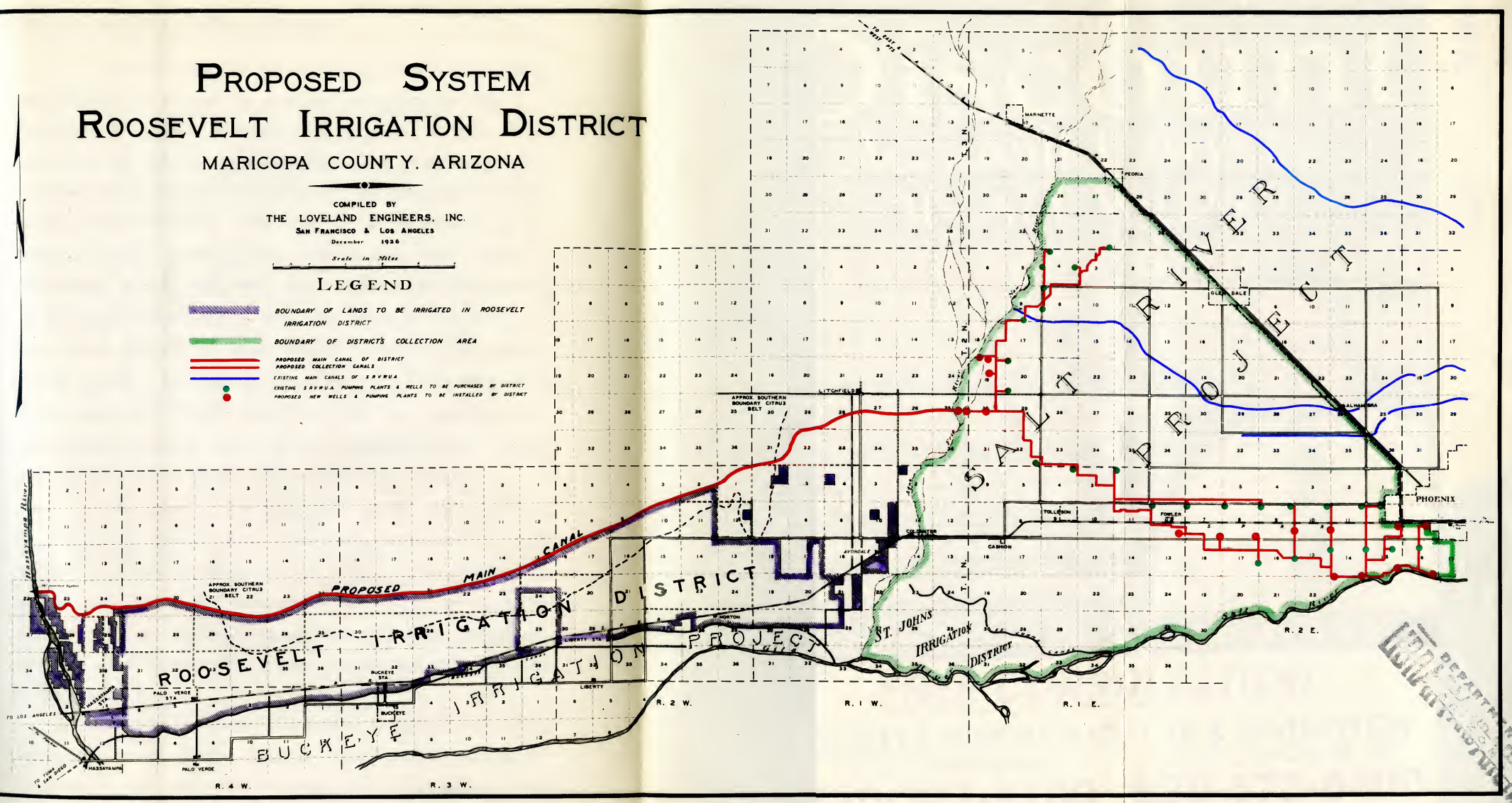
PROPOSED SYSTEM
ROOSEVELT IRRIGATION DISTRICT
MARICOPA COUNTY, ARIZONA

COMPILED BY
THE LOVELAND ENGINEERS, INC.
SAN FRANCISCO & LOS ANGELES
December 1926

Scale in Miles

LEGEND

- BOUNDARY OF LANDS TO BE IRRIGATED IN ROOSEVELT IRRIGATION DISTRICT
- BOUNDARY OF DISTRICT'S COLLECTION AREA
- PROPOSED MAIN CANAL OF DISTRICT
- PROPOSED COLLECTION CANALS
- EXISTING MAIN CANALS OF S.R.V.W.U.A.
- EXISTING S.R.V.W.U.A. PUMPING PLANTS & WELLS TO BE PURCHASED BY DISTRICT
- PROPOSED NEW WELLS & PUMPING PLANTS TO BE INSTALLED BY DISTRICT



DEPARTMENT OF ARCHIVES

QUANTITY AND QUALITY OF WATER AVAILABLE

Detailed studies of the underground water bearing area which will be used as a source of supply for the Roosevelt Irrigation District (See Vol. IV., of this Series), show that its annual replenishment is far in excess of the quantity which will be extracted for the irrigation of all of the lands within the boundaries of the District. As a matter of fact, investigations made by the United States Government in 1903 and 1904, which is prior to the creation of the Salt River Project, show that even at that time a very large quantity of water was available from this underground source. Irrigation within the Salt River Project has added enormously to the quantity in the water bearing area, thus giving absolute assurance of a plenteous water supply for the irrigation of the entire Roosevelt District.

In regard to the quality of water, the best proof is that it has been used for irrigation and domestic purposes with very satisfactory results for many years. Chemical analyses have been made which prove that the water is of desirable quality and particularly adapted to the irrigation of virgin soils, because of its high nitrate content and fertilizing properties.

In this connection reference is made to the findings of Mr. C. C. Cragin, General Superintendent and Chief Engineer of the Salt River Project, who stated in his report

to the Board of Directors of the Roosevelt Irrigation District, May, 1925, as follows:

> "From tests and long period operation records of the Salt River Project, the deep percolation from irrigation water tributary to the pumping area is ample for the area (32,500 acres) recommended herein to be irrigated by the District. Natural underflow and surplus flood water will add a large margin of safety.
>
> "The Joint Head water has been used for nearly sixty years by the Project lands under the Salt River Valley Canal. It will be noted that the composite of all the well waters is better all through the analysis than the water diverted at Joint Head. The additional wells needed to complete the quantity of water required by the District will not materially change the analysis shown."

CLIMATE

Climatic conditions in this locality have been analyzed in the Agricultural Report (Volume II). It may be well to point out however the comparative climatic conditions as between this area and other well known sections, particularly with relation to those districts largely devoted to citrus culture. For this purpose a tabulation has been prepared which sets out in summary form the conditions in various localities which are comparable to the Roosevelt Irrigation District:

COMPARATIVE CLIMATIC DATA OF THE ROOSEVELT IRRIGATION DISTRICT AND SOUTHERN CALIFORNIA

Locality	Length of Record: Years	Avg. Date of Last Killing Frost in Spring	Avg. Date of First Killing Frost in Autumn	Avg. Length of Frost Free Season days	Mean Annual Percentage of Possible sunshine	Mean Annual Precipitation	Mean Relative humidity, percentage. Noon	Average Hourly Wind Movement: Miles
Phoenix, Ariz.	30	Feb. 13	Dec. 3	293	84	7.74	30	4.6
Yuma, Ariz.	47	Jan. 21	Dec. 19	332	89	3.31	27	6.1
Brawley, Calif.	11	Feb. 20	Dec. 8	291	-	2.44	-	-
Calexico, Calif.	15	Feb. 2	Dec. 8	309	-	3.10	-	-
Riverside, Calif.	23	Feb. 26	Nov. 28	275	-	10.75	-	-
Redlands, Calif.	21	Feb. 26	Dec. 7	274	-	14.61	-	-
Upland, Calif	15	Feb. 21	Dec. 12	294	-	20.64	-	-
Pomona-Ontario, Calif.	9	Mar. 27	Nov. 24	242	-	19.53	-	-
Pasadena, Calif.	12	Feb. 17	Dec. 10	296	-	18.41	-	-
San Bernardino, Calif.	22	Mar. 8	Nov. 22	259	-	16.06	-	-
Azusa, Calif.	18	Mar. 1	Dec. 8	282	-	19.23	-	-
Elsinore, Calif.	21	Mar. 21	Nov. 21	245	-	13.26	-	-
Escondido, Calif.	23	Mar. 9	Nov. 18	254	-	16.41	-	-
Los Angeles, Calif.	42	None	None	365	72	15.62	53	4.9
San Diego, Calif.	49	None	None	365	66	9.63	66	5.7

A study of the foregoing table brings out the following comparative facts:-

1.- The Roosevelt Irrigation District averages a longer frost free growing season than the famous citrus belts surrounding Redlands, Riverside, San Bernardino, Pomona, Ontario, Azusa, and Escondido.

2.- The Roosevelt Irrigation District has a higher mean minimum temperature during November, December, January and February than Redlands, Riverside, San Bernardino, Upland, Pomona, Ontario, Pasadena, Elsinore and Escondido.

3.- With the exception of San Bernardino in January and Riverside in November, the Roosevelt Irrigation District has each month of the year a higher mean maximum temperature than Los Angeles, San Diego, Redlands, Upland, Pomona, Ontario, Pasadena, Azusa, Elsinore and Escondido, all nationally known for the excellence of their mild winter climates. There is less wind movement and a greater percentage of sunshine than at either San Diego or Los Angeles.

It should be observed that duration of low temperatures is important. On the Roosevelt Irrigation District the exceedingly dry air favors a rapid warming after sunrise, so that the minimum temperature is usually of but momentary duration and less harmful than that in the orange belts of Southern California. Absence of smudge pots in the citrus belt about Phoenix such as are everywhere evident in the citrus sections of Southern California, bears out this statement.

The winter seasons are delightful and invigorating and mild enough to allow the continual growth of hardy crops. The

springs are warm in the daytime and quite cool at night. These are seasons of both planting and harvest. While the summers are characterized by hot days, the low humidity makes possible the activity of farm workers and farm stock with very little lowering of efficiency, overheating of men or animals being extremely rare. The autumn is not dissimilar to the spring. At this time spring plantings are harvested and winter crops planted.

The region is characterized by a summer rainy season and a winter rainy season, the precipitation for the year averaging 7.74 inches. Weather Bureau records indicate that the sun has shown 84% of the possible time since the weather station was established. There are no seasons of the year when strong disagreeable winds blow for days at a time, as is customary in so many localities. Damaging storms of any kind are practically unknown.

Quoting from the summary in the Agricultural report of Messrs. Heard and Holmes (Vol. II) with relation to climate in the District:

> "The average frost-free season is 293 days, and the average number of days per year when the temperature drops to 32°F or below is 13. The climate is identical with that of the Salt River project. Local topographical features indicate about 9500 acres of the District lie in areas which are so protected from damaging freezes in winter as to justify citrus culture without resorting to artificial orchard heating. Rainfall averages less than eight inches per year. Wind movements are steady but mild. Severe damaging winds are practically unknown."

SOCIOLOGICAL CONDITIONS

Because of the proximity of the District to Irrigation projects long since developed, it is already reasonably well served by towns. The list of these towns include Tolleson

and Cashion on the Salt River Project, Coldwater and Avondale in the Roosevelt Irrigation District, Litchfield, the model town of the Southwest Cotton Company, and Liberty, Buckeye, Palo Verde and Hassayampa in the Buckeye Project. Phoenix the metropolis of the state, is readily accessible from even the most remote part of the District and affords excellent market outlets for farm produce and has well developed merchandising facilities and many rapidly improving metropolitan advantages.

SCHOOLS AND CHURCHES

Excellent school facilities are already provided at Tolleson, Cashion, Litchfield, Buckeye and Palo Verde, while one of the best schools of the entire area is located near Avondale inside the Roosevelt Irrigation District. Well established church organizations of various demonimations are represented at Litchfield, Tolleson, Liberty, Buckeye and Palo Verde.

RAILWAY COMMUNICATION

The newly constructed main line of the Southern Pacific Railroad traverses the entire length of the District near its Southern boundary, so that no part of the District is more than four miles from this railroad which is a through line for express, freight and passenger service between El Paso, Phoenix and Los Angeles. There are six stations and shipping points within the boundaries of the District. No difficulty will be encountered in obtaining satisfactory refrigeration for freight and express shipments of perishables when the District has begun production of horticultural crops. In substantiation of this it may be well to point out that

DEPARTMENT OF ARCHIVES

refrigeration facilities are already provided for several thousand cars of perishables shipped annually from each of the several cantaloupe growing localities of the Salt River Valley. For domestic ice supply the plant now located at Buckeye can be rapidly expanded to attend to the needs of refrigerating additional cars for perishable shipments. The Glendale ice plant now serves the eastern end of the District. As indicating the increase in shipments of cantaloupes from the agricultural area contiguous to the Roosevelt Irrigation District the following is of interest:

Season	Number of cars Shipped out
1919	1832
1920	1164
1921	1474
1922	1558
1923	1208
1924	2135
1925	3665

The Santa Fe Railway Company is soon to begin construction of a branch line extending from the station of Beardsley on its main line south to a terminal point near the main canal of the Roosevelt Irrigation District about six miles southwest of Litchfield and there is a well founded rumor that it will extend to Buckeye. The Railroad Company announces that $1,000,000 will be spent on this and allied improvements to its system in this vicinity. Thus in addition to Southern Pacific main line transportation east, west and south, the eastern half of the District will also have direct rail communication with northern, eastern and western points via Santa Fe Railway.

PAVED STATE HIGHWAYS

The main state highway between Arizona and California extends through the center of the east ten miles of the Roosevelt Irrigation District, west of which it lies generally about one-half mile south of the District's south boundary. All parts of the District are within about four miles of this thoroughfare, which was constructed of concrete in 1920 and 1921 and is well designed to withstand the heavy traffic to which it is subjected. The pavement extends from the western end of the District to the network of paved roads in the Salt River Project, giving residents of the District paved connections with all towns of the Salt River and Buckeye Projects as well as good highway connections with the chief points in Arizona and the eastern and southern states. This highway continues as a well-graded and well-constructed road from near the west end of the District down the Gila River Valley to Yuma, where it connects with the paved highway system of Southern California and the Pacific Coast. In every month of the year thousands of travelers by automobile pass over this transcontinental artery through and along the Roosevelt Irrigation District, which is an asset to the people of the District, the tremendous importance of which it will be difficult to gauge. A branch of this highway, also paved, extends through the district to Litchfield. In addition to facilitating the use of farm automobiles and trucks, this highway provides fast truck, freight and passenger service, to Phoenix and Los Angeles.

in detail and found to be feasible and conditions favorable. The complete detail of these various findings, however, is so voluminous that it is considered more practicable to handle them in separte volumes which have been segregated and compiled. For the information of any who may find it desirable to make a further analysis of any of the phases of the Roosevelt Irrigation project not fully considered herein, reference is made to the complete findings which are on file at the office of the Roosevelt Irrigation District in Phoenix, a portion of which have been prepared in report form, titled as follows:

Volume I -- Economic Features (this Volume).

Volume II -- Agricultural Conditions.

Volume III -- Engineering Features.

Volume IV -- Water Supply.

An analysis of the economic status of the District may best be approached first with relation to the project itself, its management, its location, its potential development based upon costs and return upon the investment and all other elements which may be considered true criteria of its economic and financial feasibility, and then more generally by an analysis of the basic economic conditions in Maricopa County, where the project is located, and within the State of Arizona as compared with other sections of the country.

LATERAL OR COUNTY ROADS

The Board of Supervisors of Maricopa County has passed an ordinance providing for the immediate construction of a network of roads throughout the District, the only condition prior to the construction of these roads being assurance that the District will immediately proceed with the construction of its system. Therefore, these roads will be installed immediately after the sale of the bonds, thus providing ample local transportation facilities.

The type of soil of three-fifths of the District is such that excellent roads for ordinary traffic can be constructed and maintained by ordinary grading and dragging. Roads on this soil will be always well drained and never so muddy as to be impassable. A fair road-making soil is found on the remaining two-fifths of the District where the chief roads should be graveled for satisfactory results. The policy of road construction in Maricopa County has been to establish and maintain good highway connections where traffic conditions are heavy enough to warrant.

MARKETS

As has been stated in consideration of the railroad and highway facilities, the District is located equally as advantageously to local, state and distant markets as the adjoining Salt River and Buckeye projects. Relative to the shipment of perishables, such as lettuce and cantaloupes, to eastern markets, it is more favorably located than the Imperial and Yuma Valleys. With the rapid increase in the growth of the

population of Arizona, markets for all the horticultural produce of the District can be found within the state, or possibly at times within Maricopa County alone, which now imports from distant sources a large percentage of the fruit and vegetables which it annually consumes. Local creameries of the Salt River Valley are already accommodating a large dairy industry capable of great expansion. In addition the markets of Los Angeles are being opened to this profitable industry by the recently inaugurated Southern Pacific overnight express train service from Phoenix to that city.

ARIZONA LIGHT AND POWER COMPANY SERVICE

As will be noted from the accompanying map, showing the economic features of the District, almost 30 miles of electric power lines of the Central Arizona Light and Power Company traverse the eastern two-fifths of the District, making electric service readily available to the residents of the District.

TELEPHONES

Telephone communication is already established between Phoenix and Hassayampa at the west end of the District. This line extends along the state highway through the east part of the District for about eleven miles and skirts the south boundary of the District the remaining distance.

In order that the transportation facilities and various other improvements which contribute to the convenience and welfare of the District may be better comprehended, a map has been prepared showing their location and extent.

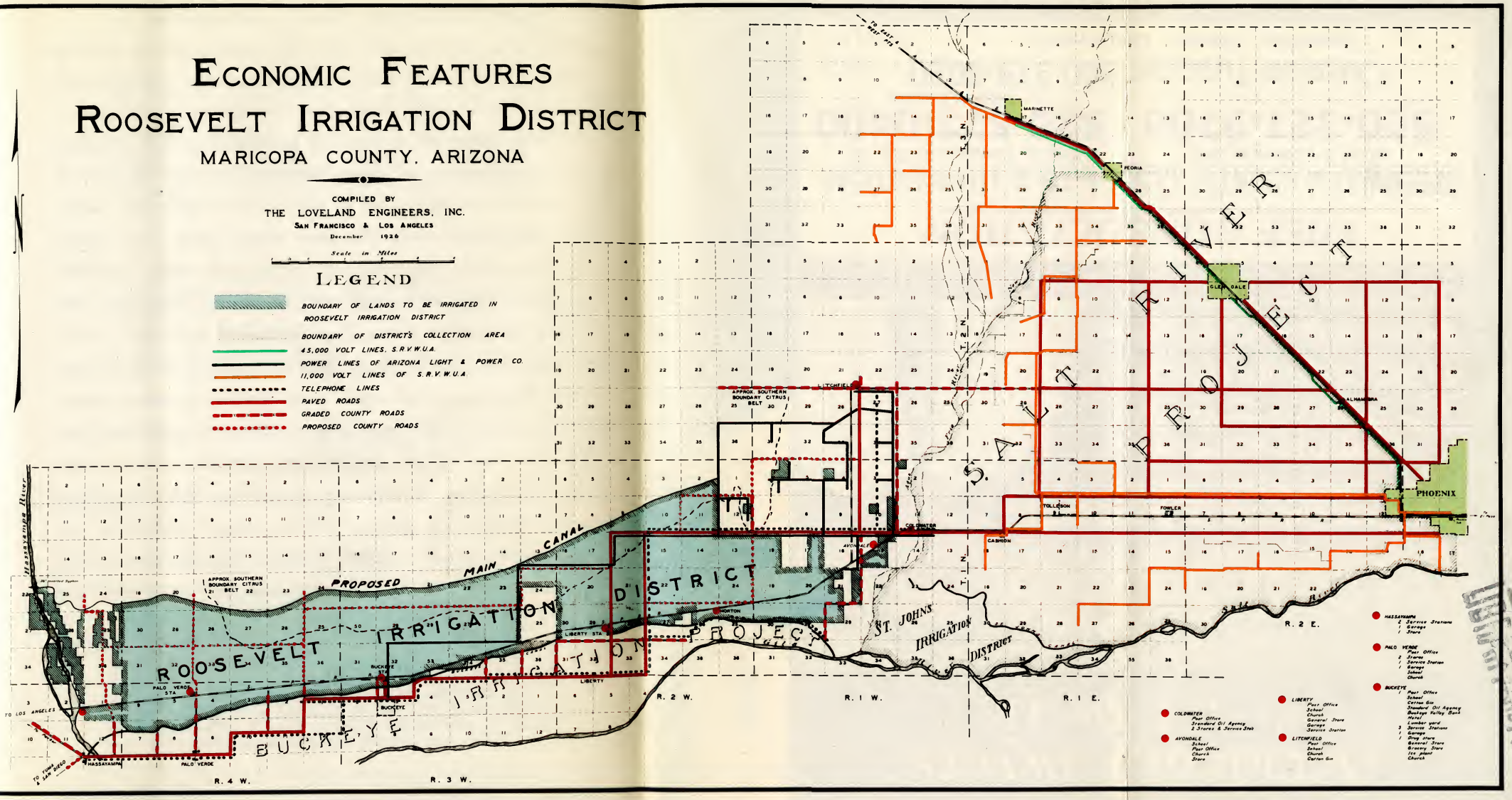
Economic Features
Roosevelt Irrigation District
Maricopa County, Arizona

COMPILED BY
THE LOVELAND ENGINEERS, INC.
San Francisco & Los Angeles
December 1926

Scale in Miles

Legend

- Boundary of lands to be irrigated in Roosevelt Irrigation District
- Boundary of District's collection area
- 45,000 volt lines, S.R.V.W.U.A.
- Power lines of Arizona Light & Power Co.
- 11,000 volt lines of S.R.V.W.U.A.
- Telephone lines
- Paved roads
- Graded county roads
- Proposed county roads



LIBRARY DEPARTMENT OF ARCHIVES

LAND DEVELOPMENT PROGRAM

Realizing that from the standpoint of the success of this District, it is very desirable that the lands within its boundaries be placed upon a production basis as rapidly as possible, a survey has been made to obtain declarations of intention and agreements on the part of the owners of land whereby the rate of development could be determined with reasonable accuracy. The results of this campaign show that the owners of at least 15,000 acres will clear and prepare their lands for cultivation during the first year after water is made available to them, and that thereafter the development of the lands will be rapid. As a matter of fact the landowners within the District show every evidence of enthusiastic determination to develop their lands beginning immediately and proceeding as rapidly as possible. As to the preliminary steps, such as clearing and leveling, and the soil and crop conditions which are factors, we quote in summary form from the Agricultural Report on this project, prepared by Messrs. Heard and Holmes, the complete detail of which is submitted in Volume II of this series.

Clearing and Leveling

> "Much of the land has already been cleared and leveled. On that remaining, clearing will usually be done by dragging. It is estimated that the District may be cleared, leveled and prepared for cultivation in a satisfactory manner for an average cost of from $22.00 to $24.60 per acre."

Quality of Soils

> "Soils show a wide range of crop adaptation. 95% of the area is comprised of two types which are the

most popular in nearby irrigated districts. Of this 95% more than 82% constitutes one of the most promising tracts of fertile lands to be found in the arid Southwest. About 13% may be considered as second class lands, because they are so impregnated with calcareous materials as to make cultivation more difficult than in the main body of the soils. There is ample evidence, however, to justify the belief that these soils will become first class soils within a period of a few years from the commencement of cultivation. The remaining 5% is classed as of very little agricultural value. However, a portion of this land will undoubtedly be used for ditch rights-of-way, sites for farm buildings, corrals, etc., thus reducing the low value acreage."

Crops

"The chief agronomic crops will probably be alfalfa, cotton and grains, all of which may be grown in this location at a profit, some times yielding very attractive financial returns. The main horticultural crops will probably be citrus, grapes and dates, on which financial returns to the growers are high. Intensive horticultural development is probable.

The above findings have been checked by this organization and are found to be based upon authentic data and conservative estimates.

CONSTRUCTION PERIODS

The construction periods for the installation of the system have been fixed upon the basis of the data obtained in the land development investigation, and accordingly, the engineering program contemplates the immediate construction of facilities which will provide for the irrigation of 15,000 acres; the second construction period, which it is estimated will begin eighteen months to two years after the completion of the first construction period, will provide facilities for an additional 10,000 acres, and the third construction period will provide for the remainder. It is pointed

out, however, that any change in the rate of development would alter the estimate of the time which will elapse between the construction periods, and further, that such facilities as pump plants, ditch lining, etc., will be installed as needed, and their construction will not be confined to any certain specified period. This is particularly true of the last construction period, during which much of the work will undoubtedly be done by the maintenance force with money derived from operation, thus obviating the necessity for the issuance of additional bonds. However, as an element of surety, provision is made in this set-up for the financing of all work to its completion.

ESTIMATED COSTS AND PROPOSED BOND ISSUES

The estimated cost of the proposed irrigation system has been computed in detail for each structure and portion of the system. Bills of material for each design have been prepared and present market prices of each commodity have been applied. Other phases of the cost of the structures installed, including labor, freight haul, etc., have been computed in each instance. The complete detail of these estimates is available in the office of the Roosevelt Irrigation District, and also listed in considerable detail in the Engineering Report (Volume III). Every effort has been made in these estimates to provide liberally for all reasonable contingencies which may arise.

The cost of the completed system has been segregated into three parts, based upon the program of development and

construction periods outlined previously herein. Careful field inspections and office analyses have been made to determine the construction period within which each structure or facility shall be installed. The amount in each instance includes not only the estimated construction costs but also the maximum bond discount and interest for a two-year period upon the bonds issued. The summary follows:

	Total	Per Acre
First Construction Period	$1,760,000	$47.85
Second Construction Period	400,000	10.87
Third Construction Period	340,000	9.25
TOTAL - - - -	$2,500,000	$67.97

It is proposed to immediately issue $1,760,000 bonds to provide for the first construction period, and the balance as needed.

ANNUAL CHARGES PER ACRE

Studies have been made of operating costs under various irrigation systems in Arizona, California and other states, and the estimates used herein have been derived after careful study of the conditions obtaining. The power cost under the Roosevelt Irrigation District has been computed on the basis of actual costs incurred by the Association in the operation of its pump plants. Studies and estimates show that the annual power costs will approximate $2.18 per acre and that the operation and maintenance of the

canal system and pumping plants will be $2.50 per acre per year. Because of the division of the construction of the complete system into construction periods, and the fact that two years' bond interest is provided in the amount of the bonds to be issued, an economic advantage will accrue, inasmuch as the annual charges per acre during the development period (when the land owners can least afford to pay), will be lower than during the later, more prosperous period of development.

These computations show that during the early stages of the development the annual charge per acre will range from $6.00 to $8.60. Subsequent to the eleventh year after the commencement of operation, in other words, when the requirement for the redemption of bonds as set out in the Irrigation District Act becomes operative, the total annual charges including all the above elements and in addition the annual allowance for the redemption of bonds, will range from $10.00 to $11.30 per acre per year. After a careful analysis it is found that these allowances should be ample and that the annual charges will not exceed the amounts set out.

LAND VALUES

Comparison of the lands with the Roosevelt District with those in the adjacent Buckeye project shows that each has certain advantages. Buckeye lands have a very cheap and reasonably dependable water supply, but their soils are generally much heavier and required more power for tillage. Also, drainage is poor in certain localities. The Buckeye project is devoted to general farming and dairying and there is less opportunity to build up an intensive horticultural industry, in-

asmuch as soils are too heavy for most tree fruits. Furthermore the Buckeye lands are located in the trough of the Gila Valley where it is too cold for early production and the temperatures in winter are too severe for sub-tropical fruits. The Roosevelt District, on the other hand, has one-fourth of its acreage adapted to sub-tropical horticultural development, while nearly the entire acreage is adapted to general farming and stock raising. Since the soils of the District, under irrigation, will be undoubtedly as productive as those of the Buckeye project, and at the same time easier to till, it seems assured that the general farming areas will have a somewhat higher value per acre than the Buckeye lands. Citrus lands of the District undoubtedly will be valued at a higher figure. Buckeye lands are valued in general from $150 to $200 per acre.

Prevailing soil types in the District are somewhat lighter and easier to till than in the Salt River Project. The proportionate areas of choicest to second-class soils are practically the same in the two projects. The proportionate area of citrus lands is greater in the District. The water supply is cheaper in the Salt River Project, which has large quantities of developed power which it sells at a profit. The higher valuation of lands adjacent to the principal towns, especially Phoenix, are not paralleled in the District. For this reason it is not likely that the valuation of District lands will ever fully equal that of Salt River Project lands, which for general farming range from $250 to $350 per acre under present economic conditions, while citrus lands unplanted to trees are valued at from $350 to $800 per acre, and full

bearing orchards exchange hands at from $1500 to $3000 an acre, and in some instances valuations are quoted at much higher figures than mentioned.

A study has been made of the values of similar lands in this locality which have water available, but which have not been put under cultivation, and also of lands actually under cultivation and improved. By applying conservative comparative values to the lands within the Roosevelt District at such time as water is available to them, it is found that the properties which will be security for these bonds, plus the improvements, will be not less than $6,375,000. This is based upon a price of only $75 per acre for raw land with water available to it, and $200 per acre for land which is cleared and under cultivation. The actual cost of the irrigation system has been added to the amount derived by applying the above unit prices. No consideration has been given to the added value which will obtain because of improvements, such as farm buildings, etc. Thus the value behind the bonds at the end of the first financing may conservatively be estimated at three and one-half times the face value of the bonds which will be outstanding at the end of the first construction period. Upon the completion of the final period of construction, the value of these lands, plus improvements, may conservatively be estimated at $9,850,000, which is approximately four times the total face of the bonds then outstanding, i.e., $2,500,000.

In order to have the benefit of judgment from an impartial source, the Real Estate Board of Phoenix was requested to make an appraisement of District's lands. A complete copy of their findings follows:

HISTORY OF DISTRICT--ORGANIZATION AND PURPOSE

The Roosevelt Irrigation District was organized in 1923 under the Irrigation District Act of the State of Arizona for the purpose of financing and constructing an irrigation system to irrigate the lands within its boundaries and for the purpose of developing an adequate water supply. With relation to the latter phase a contract has been entered into between Roosevelt Irrigation District and Salt River Valley Water Users' Association which provides for an ample supply of water to be obtained from an extensive underground reservoir located in the Salt River project. Water is to be extracted from the underground reservoir by wells and pump plants and transmitted to the District lands by gravity, where a system of canals, ditches and other facilities has been designed to distribute water to the individual parcels for irrigation.

DESCRIPTION OF DISTRICT

The Roosevelt Irrigation District is composed of a tract of fertile land about twenty-five miles long from east to west, having a width of from two and one-half to four and one-half miles, and containing an area of 36,784 acres. It is situated in Township 1 North, Ranges 1, 2, 3, 4 and 5 West, and Township 1 South, Ranges 3, 4, and 5 West of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. It is 400 miles east of Los Angeles and

PHOENIX REAL ESTATE BOARD

PHOENIX, ARIZONA

CERTIFICATE OF APPRAISAL

No. 57 Phoenix, Arizona, March 18, 1927

This is to certify that the

PHOENIX REAL ESTATE BOARD APPRAISAL COMMITTEE

have carefully examined, considered and appraised the following described property, situated in the County of Maricopa, State of Arizona:

All of the property under the Roosevelt Irrigation District, comprising approximately 36,784 acres.

In the opinion of the Appraisal Committee this property will be worth $150.00 per acre when project is completed, ample water available for irrigation and the land ready for cultivation.

In consideration of the above facts, this Official Appraisement is made by the

PHOENIX REAL ESTATE BOARD

Value of the above described property, exclusive of improvements,

Five million five hundred seventeen thousand six hundred and no/100 ## ## Dollars ($5,517,600.00)

Value of improvements,

_____ Dollars ($)

Total Value

Five million five hundred Seventeen
thousand six hundred and no/100 ## ## Dollars ($5,517,600.00)

IN WITNESS WHEREOF, the signatures of its officers are hereto affixed.

PHOENIX REAL ESTATE BOARD

By Robert Hunsick (Sgd.)
President.

By Frank A. Jefferson (Sgd.)
Secretary.

By Geo. E. Lilley (Sgd.)
Chairman of Appraisal
Committee.

Upon the basis of the Phoenix Real Estate Board appraisement the total value of the properties which will be security for the bonds outstanding at the end of the first financing, in the amount of $1,760,000 will be approximately $7,250,000. Approximately the same relationship exists between the values and the amount of the bond issue as shown under the estimated values contained herein, that is, the values are approximately four times the face of the bonds. The Real Estate Board has not included in their appraisement an estimate of the value of lands when actually under cultivation. It would appear reasonable to assume that the increment of added value under agricultural and horticultural development with proper culture and fertilization would equal at least an average of $50.00 an acre, thus arriving at a total comparable with the estimate upon which the calculations herein are based.

REASONABLENESS OF ANNUAL CHARGES

In this regard it is pointed out that Messrs. H. C. Heard and L. C. Holmes, agricultural specialists of wide knowledge and experience in this vicinity and throughout the State of Arizona, in their report on this project (Vol. II), state that upon the assumption of capital costs and annual charges per acre considerably in excess of those which will obtain under our revised plan, it would be feasible and financially sound for the landowners to develop their lands. In our preliminary discussion of the feasibility of this District from the agricultural standpoint, we submitted to Messrs. Heard and Holmes an estimate of costs which were designed to

cover every possible contingency, and the statement contained in the letter transmitting their findings contains the following paragraph:

> "Basing our estimates upon information furnished by you that the capital costs on this project would not exceed a total of $75 per acre, and an annual charge per acre not in excess of $13., for operation, maintenance, bond interest, etc., and taking into consideration the fertility of the soil, location of facilities now available, and comparative costs and comparative returns of other projects similarly situated, we find that the project as outlined by you is economically and financially feasible and sound."

It will be noted that the preliminary estimate of costs set out above which was used as a basis in making the report, is practically 12% higher than the costs which we now find will obtain under our revised estimates, based upon detailed investigations and engineering studies and economies which have been effected in the amended contract. It is further pointed out that in the Heard-Holmes report, it was found that the fertility of the soil within the Roosevelt District is on a par with the fertility of the soil within the Salt River Project. It would therefore appear conservative to assume that the value of the annual crops produced would approximate the same general average as of that project.

The average in the Salt River Project during 1926 was approximately $100 per acre, and upon this basis, the value of the crops produced annually in the District, when fully developed, would equal $3,678,400. Based upon estimated costs of production set out in the Heard-Holmes report, this would leave a margin available for bond interest and retirement over and above maintenance and operation costs of the Irrigation District, equal to

from eight to ten times the required amount. Even if we assume that the average value of crops produced per acre under irrigation throughout Maricopa County during 1925, i.e., $85 per acre, be applied as representing a more conservative estimate, the net revenue to the land owners of the District would be many times the amount necessary to meet bond interest and retirement. It may be said in passing that out investigations disclose that the annual charges estimated herein are lower than those which obtain in many similar irrigation projects which are in successful operation.

GENERAL ECONOMIC AND FINANCIAL CONDITIONS

The economic and financial status, the prosperity and the tone of business in the general vicinity of the Roosevelt Irrigation District, while not directly pertinent, will have a very decided bearing upon the success of this project. Numerous discussions with men of standing in Phoenix and vicinity show that a spirit of optimism prevails. Chamber of Commerce statistics show a decidely prosperous trend. Although the price of cotton was very low in 1926, general agricultural conditions and market returns in this vicinity, due to diversification of crops, have been exceptionally good. Land development has been proceeding very rapidly. Due to the salubrious climate the influx of well-to-do agriculturists and business men from the East has been very great during the past winter, and all indications are to the effect that the development and advancement during the past winter is but the nucleus of a very extensive and prosperous development.

Statistics of economic and financial operations which are criteria of general conditions have been compiled and are set out.

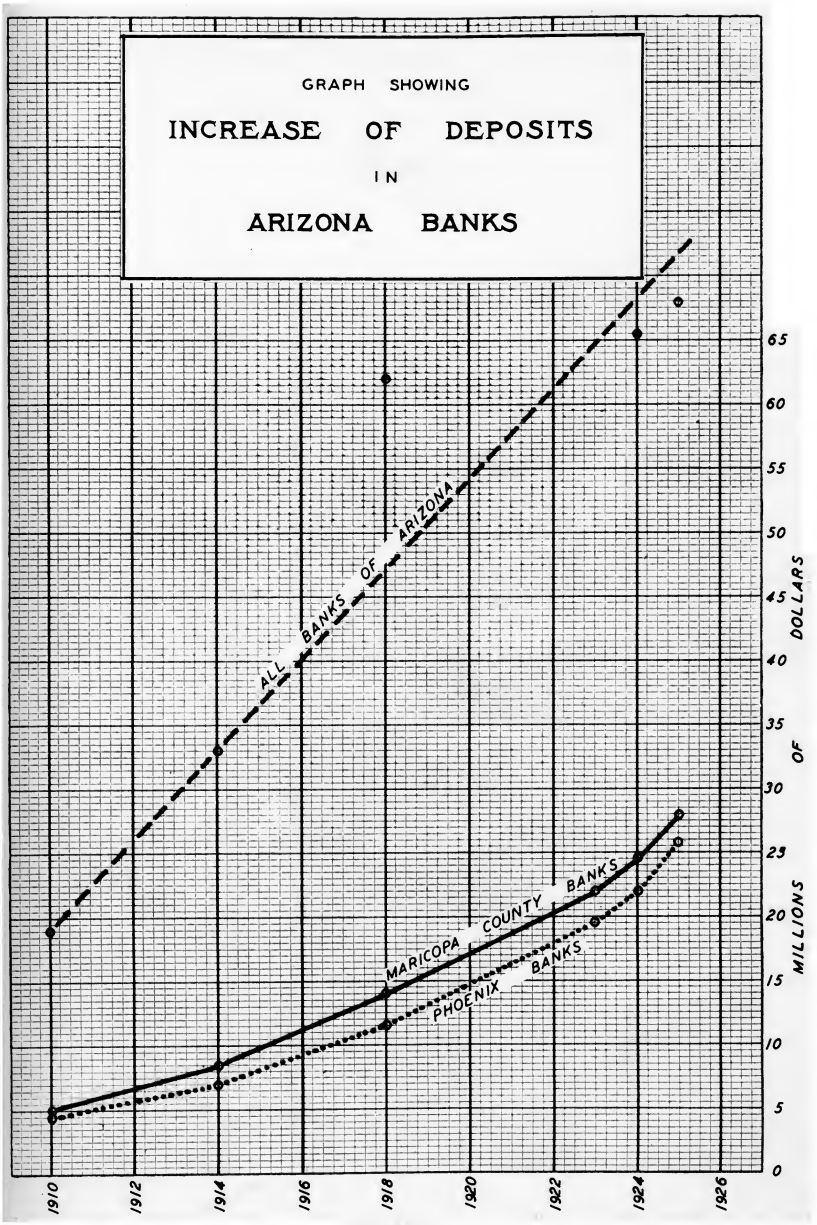
ARIZONA BANK STATISTICS

Date	Deposits in All Banks in Arizona	Deposits in Banks of Maricopa County	Deposits in Banks of Phoenix
1910-June 30,	$18,977,610.45	$ 4,894,550.65	$ 4,302,736.48
1914-March 4,	33,142,684.12	8,422,457.37	7,068,551.38
1918-Nov. 1,	62,613,537.22	13,911,261.37	11,613,078.05
1923-Sept.14,	--	21,983,798.83	19,382,376.75
1924-Oct. 10,	65,841,165.06	24,585,557.51	21,946,672.29
1925-Sept.28,	68,255,601.42	27,907,527.67	24,905,597.71

Check transactions for Phoenix have been as follows:

1922	$207,000,000
1923	260,000,000
1924	276,000,000
1925	291,067,000

The accompanying graphical illustration shows the steady growth in bank deposits for the past fifteen years and is based upon the above figures.


GRAPH SHOWING
INCREASE OF DEPOSITS
IN
ARIZONA BANKS
ALL BANKS OF ARIZONA
MARICOPA COUNTY BANKS
PHOENIX BANKS
MILLIONS OF DOLLARS
0
5
10
15
20
25
30
35
40
45
50
55
60
65
1910
1912
1914
1916
1918
1920
1922
1924
1926

CROP STATISTICS

The estimates included in the following table are based upon a careful analysis of figures obtained from reliable sources of information and show the total value of farm products for the entire irrigated area of Maricopa County for the year 1925 to have been $85.00 per acre.

Crop	Acreage	Production	Value
Alfalfa	85,000	Hay production	$1,797,500
		Dairy pasturage, dairy produce and young stock	1,334,000
		General pasturage, stock feeding, cattle, sheep, hogs and other live stock	2,293,500
General pasture, except alfalfa	33,500		1,652,000
Grain, hay	14,000		275,000
Potatoes, Irish and Sweet	800	6,400,000 lbs.	128,000
Cotton and cotton seed	102,000		9,700,000
Oats, hay	3,000	5,250 tons	78,000
Corn	6,000	54,000 tons	432,000
Barley	8,500	14,450,000 lbs.	281,775
Wheat	17,500	31,500,000 lbs.	882,000
Cantaloupes	5,400	1,215,000 crates	1,518,750
Grain sorghum	17,500	30,615 tons	949,065
Lettuce	2,080	478,400 crates	837,200
Citrus fruits	2,500	37,500,000 lbs.	1,175,000
Deciduous	2,450	9,800,000 lbs.	588,000
Grapes	1,250	500,000 crates	550,000
Watermelons	986	7,395 tons	184,875
Berries	210	84,000 crates	231,000
Miscellaneous	43,581		2,050,000
Totals --	346,257 acres		$26,937,665
Poultry and eggs			$ 800,000
Beef			1,300,000
Hogs			95,000
Honey			175,000
Other Miscellaneous			150,000
Total Value			$29,467,665

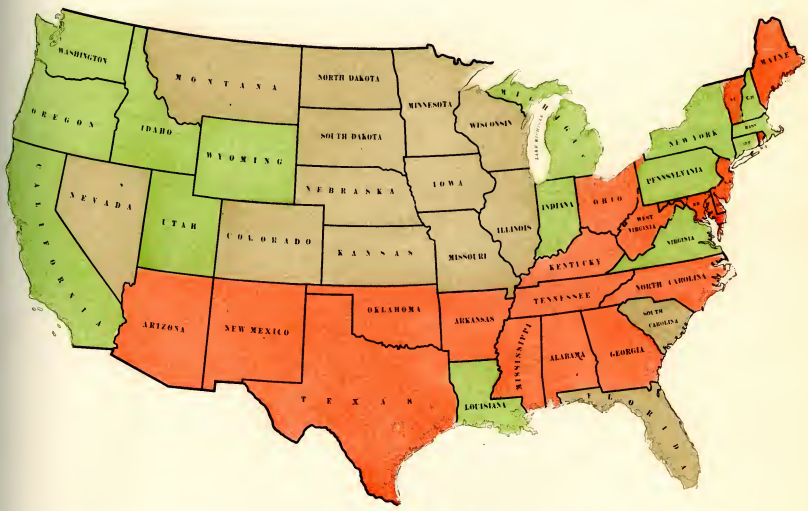
In this connection we introduce a map compiled by Cambridge Associates showing crop conditions throughout the United States for the year 1926, wherein Arizona shows favorably in comparison.

Crop Yields In 1926

As Compared With Average For 10 Years

COMPILED BY

CAMBRIDGE ASSOCIATES, BOSTON



DECLINE

INCREASE

GREATEST INCREASE

DEPARTMENT OF ARCHIVES

14 miles west of Phoenix, and lies within the Salt River Valley, wherein is also contained the Salt River project, which has been developed by the U. S. Reclamation Bureau and is one of the most prosperous and progressive agricultural enterprises in the nation today.

LOCALE

The Roosevelt Irrigation District is bounded on the north at the easterly end by the Litchfiled Ranch of the Southwest Cotton Company, while the remainder of the northern boundary is undeveloped desert land. North of the center of the District, a distance of from four to eight miles lie the White Tank Mountains. The east boundary of the District reaches the Agua Fria River, which forms the western boundary of the Salt River Project, and at this point it lies within 14 miles of Phoenix, which is the capital of Arizona and the largest city between El Paso and Los Angeles. The southern boundary of the District closely parallels the Gila River. Along the easterly part of the south boundary is an area of undeveloped lands of river bottom character, formed by the Gila River. Contingucus to the western eighteen miles of the south boundary is located the Buckeye Irrigation District, which project has been in successful operation for more than forty years, and is noted as an area profitably devoted to alfalfa seed produc-

CROP PRODUCTION ON ADJACENT IRRIGATION PROJECTS

As a measure of the prosperity which the Roosevelt Irrigation District may expect to attain within a few years following the initial development of its lands, comparison may be made to the economic features obtaining in the several irrigation projects adjoining it.

SALT RIVER PROJECT

Bounding the Roosevelt Irrigation District on the east is the famous Salt River Project, one of the most noteworthy and successful irrigation developments of the United States Reclamation Service, comprising an area of 243,500 acres of irrigated lands. Crop production on this project for the year 1925 is shown in the following tabulation:

CROP PRODUCTION - 1925

SALT RIVER PROJECT

Crops	Acreage	Unit	Yield per Acre	Total Yield	Value per Unit	Value per Acre	Total Value
lfalfa	52534	ton	5	262,670	$18.00	$90.00	4,728,060.00
lfalfa-Grain	7879	ton	2	15,758	17.00	34.00	267,886.00
lfalfa*	7879	ton	4	31,516	18.00	72.00	567,288.00
rain-Pasture	21273	Acre	-	-	-	8.00	170,184.00
arley	5461	Cwt.	17	92,837	1.95	33.15	181,052.15
eans	318	lb.	600	190,800	.07	42.00	13,356.00
ermuda grass	1640	lb.	200	328,000	.20	40.00	65,600.00
erries	116	Crt.	400	46,400	2.75	1100.00	127,600.00
ane, seed	96	Cwt.	1.5	144	37.50	56.25	5,400.00
antaloupes	5625	Crt.	225	1,265,400	1.25	281.25	1,581,750.00
orn,silage	3973	ton	9	35,757	8.00	72.00	286,056.00
otton,short seed	52244	lb.	1200	62,692,800	.083	99.99	5,224,191.02
Cotton,long seed	30536	lb.	1000	30,536,000	.12	120.00	3,664,320.00
eterita	258	ton	1.5	387	40.00	60.00	15,480.00
rait,citrus(Bearing)	1475	lb.	14000	20,650,000	.045	630.00	929,250.00
rait,citrus,non-bearing	622	-	-	-	-	-	-
rait,deciduous, (bearing)	1475	lb.	4000	5,900,000	.06	240.00	354,000.00
rait,deciduous, (non-bearing)	440	-	-	-	-	-	-
arden truck	2143	acre	-	-	-	350.00	750,050.00
ettuce	2080	Crt.	230	478,400	1.75	402.50	837,200.00
aize	6482	ton	1.75	11,343.5	35.00	61.25	397,022.50
agari	3948	ton	1.5	5,922	35.00	52.50	207,270.00
ats hay	2224	ton	1.75	3,892	13.00	22.75	50,596.00
asture	31712	acre	-	-	-	20.00	634,240.00
eas	65	lb.	3500	227,500	.05	175.00	11,375.00
otatoes	305	lb.	8000	2440,000	.02	160.00	48,800.00
adan	2202	ton	4	8,808	12.00	48.00	105,696.00
ineyard	902	Crt.	400	360,800	.80	320.00	288,640.00
atermelons	786	ton	7.5	5,895	25.00	187.50	147,375.00
heat	15812	Cwt.	18	284,616	2.80	50.40	796,924.80
Total Value							$22,456,642.47

ee following page.

(*--The reason for the duplication of the 7879 acres shown as Alfalfa - grain is that the grain was sown with the alfalfa and produced a first cutting of two tons per acre. This land then produced four tons of alfalfa hay during the balance of the season.)

Total Acreage cropped	241,791
Less acreage cropped twice	23,891
Net acreage cropped	217,900

which gives a gross value of $103.06 per acre of farm products on the Salt River Project for 1925.

BUCKEYE PROJECT

Immediately adjacent to the Roosevelt Irrigation District on the south is the Buckeye Irrigation Project which has been operating for 41 years and comprises 20,600 acres, 16,000 acres of which are under cultivation. It is a substantial agricultural area devoted chiefly to alfalfa, alfalfa seed, grain, dairy and live stock production. About 75% of the alfalfa acreage is devoted to seed growing which produces a crop of seed in July and often a second crop in September in addition to three cuttings of hay. The yield averages about 4½ tons of hay and 250 lbs., of seed per acre and with hay at $12.00 and seed at 15¢, which are conservative prices, the gross returns are $91.50 per acre. The threshed alfalfa straw is fed to cattle. Grain is planted in the alfalfa in the fall or by itself during January and February. Very little hay is shipped out, local dairy cattle consuming most of it, dairying being a very profitable industry in the Buckeye District. During the winter months about 60,000 sheep and 10,000 beef cattle are pastured, the sheep returning to the owner of the pasture

about 3¢ per head per day and the cattle about $5.00 per month per head.

SOUTHWEST COTTON COMPANY'S 17,000 ACRE RANCH

Adjoining the Roosevelt District on the northeast is the 17,000 acre Litchfield Project of the Southwest Cotton Company. Both Pima and Short Staple cotton under ideal climatic and soil conditions alternate with alfalfa and here is produced the high grade cotton lint used in the manufacture of Goodyear automobile tires.

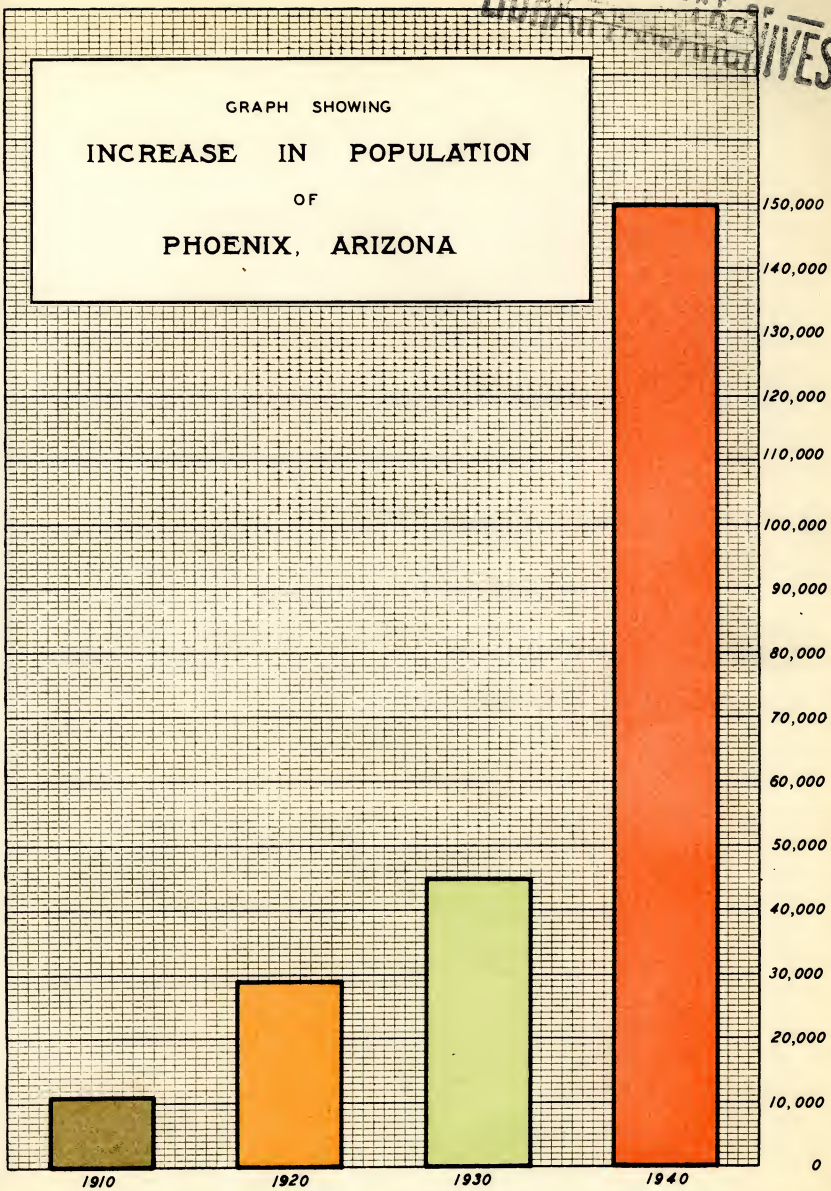
POPULATION INCREASE

As an indication of what may reasonably be expected reference is made to the remarkable growth in population of Phoenix, which is only fourteen miles from the east end of the Roosevelt Irrigation District, and which is the largest city between El Paso and Los Angeles.

Year	Population
1871	Founded
1910	11,134
1920	29,053
1926	45,000

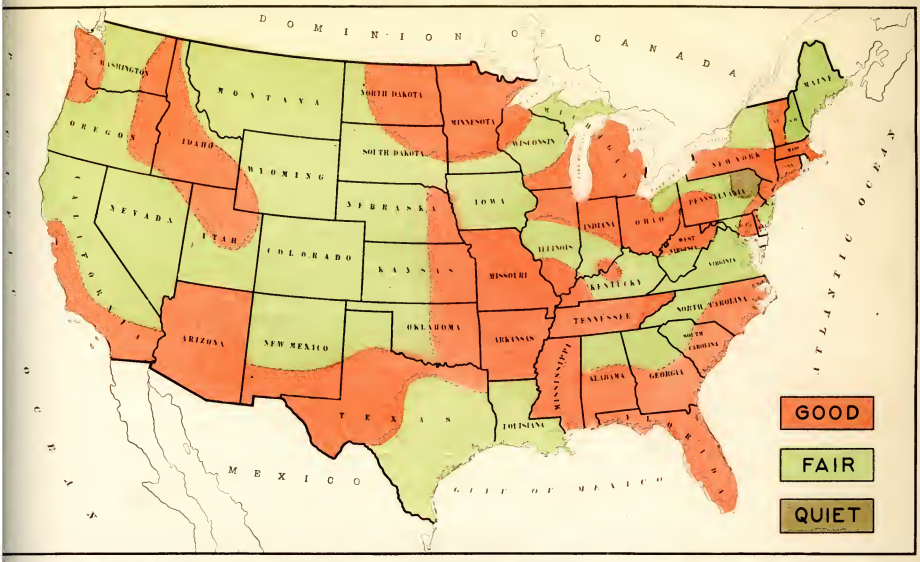
This rate of increase is perhaps more clearly indicated on the accompanying graph. It is estimated by the Chamber of Commerce and others familiar with conditions that the population of Phoenix in 1940 will be 150,000; in other words, it will have more than trebled in the next fourteen years.

LIBRARY DEPARTMENT OF ARCHIVES

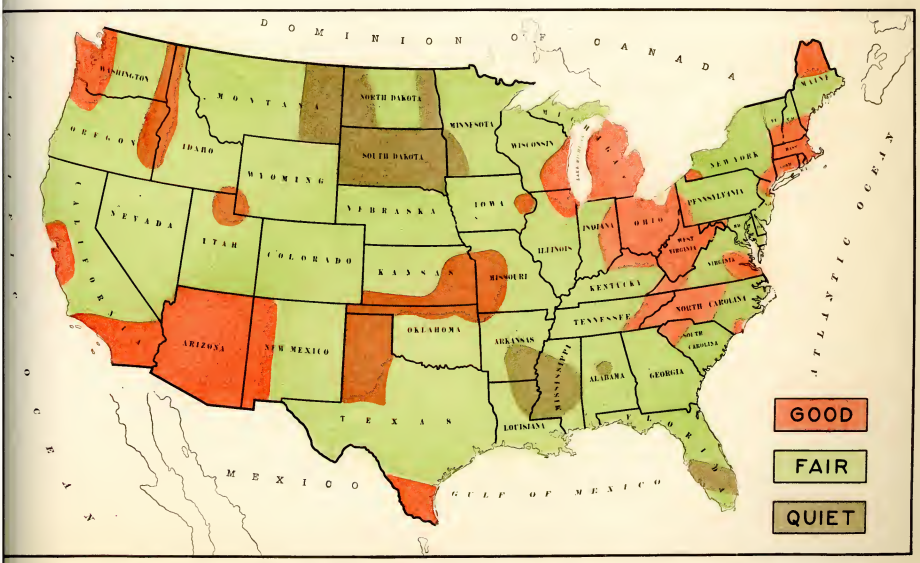


COMPARATIVE BUSINESS CONDITIONS

The relation of the State of Arizona to adjoining states and to the country generally, so far as its business prosperity may be determined, is best demonstrated by Bradstreet's maps of the United States for November 1, 1926 and November 1, 1925 which follow. It will be noted that the State of Arizona is one of the eight states of the Union whose area of good business conditions has not diminished in extent. Of especial significance is this when it is considered that the agricultural areas of the State of Arizona are to no small degree cotton producers, and despite overproduction and low prices of this commodity, Arizona has been able to maintain a status of prosperity which is decidely outstanding. Furthermore, when comparison is made with conditions in the agricultural areas of the Northwest, Middle west and South, whose business conditions are indicated on the map as having become quiet during the past months, with the fertile San Joaquin and Sacramento Valleys of California, and the recently prosperous State of Florida, it is plain that Arizona, as a State, is enjoying a remarkably prosperous era, and conditions invite and justify its further development.



REFLECTING BUSINESS CONDITIONS AS OF NOV. 1, 1925



REFLECTING BUSINESS CONDITIONS AS OF NOV. 1, 1926

CONCLUSION

Detailed investigations having been made into the financial and economic feasibility of the construction of an irrigation system for the Roosevelt Irrigation District, and of the agricultural and horticultural development of the lands within this District, its natural advantages with respect to water supply, climate, soils, transportation facilities, markets and other sociological conditions, and taking into consideration the engineering feasibility, the cost per acre of constructing the irrigation system and the annual charges required to cover maintenance, operation, bond interest and retirement.

It is found that the project is sound, that the value behind the proposed bond issue is at least four times the face of the bonds to be issued, that the management of the project is in the hands of conservative, successful business men who are practical agriculturists, and that the annual income which will be yielded from the cultivation of the lands will amply provide for the annual charges.

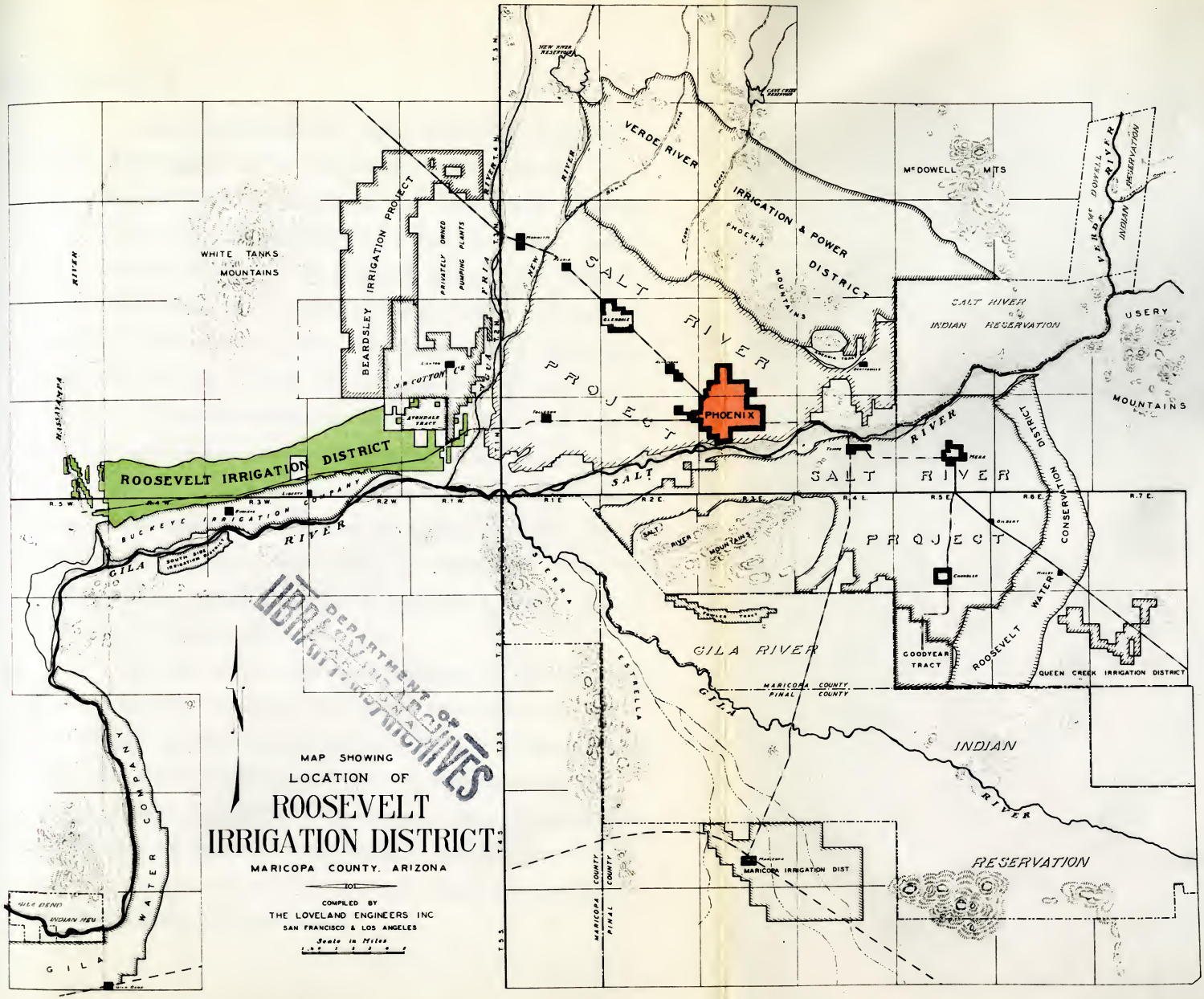
Respectfully submitted,

THE LOVELAND ENGINEERS, INC.,

By: Chester H Loveland
President.

tion and general farming. The western part of the District is bordered by undeveloped lands in the Hassayampa River Valley.

In order that the location may be more closely defined, a map of the District has been prepared which delineates the various boundaries and points of interest referred to in the description.



DEPARTMENT OF ARCHIVES
ARIZONA STATE LIBRARY

AREA OF DISTRICT

There were 35,513.67 acres within the Roosevelt District boundaries as of December 31, 1926. Looking to the future it should be mentioned that immediately adjacent to the District, particularly its easterly boundary, there are some 8,000 acres of exceptionally fertile land which can be served from this system with very little additional expense. The owners of some 1,270 acres of this additional area have actually applied, or declared their intention to apply, for inclusion within the District. Due to the fact that the only additional expenditure necessary in order to serve these lands will be the construction of laterals and wells, these possible inclusions are highly desirable and would materially reduce the capital investment per acre throughout the entire District as well as the annual charges for operation, maintenance, interest, etc.

In view of the practical certainty of the inclusion of these 1,270 acres within the District, 36,784 acres have been used as the area of the District for the purposes of this report and the estimates and designs discussed herein are based upon this assumption. The outside lands are mentioned at this time as they will undoubtedly be given consideration later in the interest of the landowners themselves and the economic welfare of the District.

TOPOGRAPHY OF DISTRICT

The lands within the District boundaries occupy a smooth mesa plain between the Agua Fria River on the east and the Hassayampa River on the west. This plain slopes uniformly from the White Tank Mountains on the north toward the Gila River which closely parallels the District Boundary on the south. The northerly boundary of the District is coincident with the location of the proposed main transmission canal. The land generally slopes at the rate of 10 to 40 feet per mile, which admirably adapts it for efficient drainage and economic distribution of irrigation water. The land surface and conditions are such that clearing and preparing for cultivation can be readily accomplished with nominal expenses. The average elevation of the District is approximately 950 feet above sea level. As set out in the agricultural report (Volume II) the soils throughout the District are of a sandy loam type and are exceptionally fertile.

MANAGEMENT--PERSONNEL

The Board of Directors of the Roosevelt Irrigation District consists of Mr. S. Carl Miller, President, Messrs. W. S. Stevens and W. J. Burns. Mr. Miller's term of office expires January, 1929; Mr. Stevens' term January, 1928 and Mr. Burns' term January, 1930.

Mr. Miller has been very active in the organiz-

ation of the District, having been a member of its Board of Directors since 1923. In addition to his ownership of land within the Roosevelt District, he is the principal owner and operator of a large ranch in the Buckeye District, which adjoins the Roosevelt on the south. This ranch is highly successful from its agricultural development, and is the home of his famous herd of registered Holstein cattle which he has exhibited at shows and fairs throughout California and Arizona during the past year with exceptional success. He maintains homes in Phoenix and Buckeye, and offices in Phoenix. He is also a landowner in the Salt River Project. His activities may be briefly summarized as follows:

Member Arizona Club for a number of years. Organized firm known as Miller Brothers, which operated successfully for a number of years. Organized Miller Cattle Company in 1922, now President and General Manager, and Member of the Board of Directors. Managed the campaign for the Arizona State Farm Bureau Federation in organizing three of the first co-operative marketing organizations in Arizona. Member of the Board of Directors and Executive Committee for several years of the three co-operative marketing organizations mentioned. Represented Arizona Co-operative Marketing organizations in Washington, D. C., December, 1922. This was the first National Co-operative Conference ever held by the agriculturists of the United States. Member of the Board of Directors of Babbitt Cattle and Live Stock Company. Member of

analysis shows that it is better for this purpose than the gravity waters which have been used in other portions of the project lands throughout a period of nearly sixty years.

5.--Climate

Climatic conditions are conducive to long growing seasons and are exceptionally healthful. At least 25% of the District lands are adapted to citrus culture without artificial orchard heating. The average frost free growing season is longer than in the famous citrus belts surrounding Redlands, Riverside and other southern California areas.

6.--Soils

Soils are found by experts to be fertile and show a wide range of crop adaptation. The soils of 95% of the District area are very productive and readily cultivable, the remaining 5% being of little agricultural value. Taken as a whole the soils of the District are at least as good as those within the Salt River project, and 82% may be said to be of the most fertile and productive lands of the arid southwest.

7.--Crops

The chief agronomic crops will probably be alfalfa, cotton and grain. Lettuce, cantaloupes, strawberries, blackberries and all similar crops are also adapted to this District. The main horticultural crops will probably be citrus, grapes and dates, upon which financial returns to the growers are high. Intensive horticultural development is probable.

8.--Clearing and Leveling

The cost of clearing, leveling and preparing the land for cultivation will average $22.00 to $24.60 per acre. Considerable areas within the District have been cleared and leveled and need only be put under cultivation.

9.--Sociology

Modern conveniences from the standpoint of living conditions, communication and marketing of products are readily available to the lands within the District. Towns and community centers with good school, church, social and mercantile facilities are located conveniently to every section of the District. Telephone, electricity and other conveniences are established. A paved transcontinental highway traverses the District. Ordinances have been passed and fund provided for the immediate construction of lateral roads and highways. The main transcontinental Southern Pacific Railroad traverses the entire length of the District and there are six stations established within its boundaries.

10.--Land Development

A survey of the landowners of the District shows that at least 15,000 acres will go under cultivation within one year after water becomes available to the land, 10,000 additional acres within two years and the remainder approximately two years thereafter. The construction of the system has therefore been divided into periods to meet these needs.

11.--Estimated Costs and Proposed Bond Issue

The estimated cost of the system, including provision for two years interest during construction and the maximum bond discount, in other words, the total face value of the bonds to be issued, divided into construction periods, is as follows:

	Estimated Cost	
	Total	Per Acre
First Construction Period	$1,760,000	$47.85
Second Construction Period	400,000	10.87
Third Construction Period	340,000	9.25
Total --	$2,500,000	$67.97

It is proposed to immediately issue bonds to meet the needs of the first construction period, the remaining bonds to be issued as needed.

12.--Annual Charges

Detailed studies show that the annual charges per acre for maintenance, operation, power costs and bond interest will range from $6.00 to $8.50 during the early stages of development, and that when the requirement for the redemption of the bonds becomes operative, the charges will range from $10.00 to $11.50 per acre per year. These charges are well within the economic limit and are lower than those obtaining in many other districts in this vicinity.

13.--Land Values

The land values at the end of the first financing, as shown by the value of similar lands in this general vicinity will approximate $75.00 per acre for the raw land with water available to it, and $200.00 per acre for lands which are cleared and under cultivation. The total value of the lands within the District upon this basis, at the end of the present financing, plus the value of the irrigation system, equals $5,375,000. Upon the completion of the final period of construction, the value of these lands and the irrigation system would be at least $9,850,000. The Phoenix Real Estate Board appraised the raw lands at $150.00 per acre with water available and ready for cultivation. Upon this basis the value of the lands in the District plus the value of the water system would be $7,250,000. It would appear reasonable to assume that the increment of added value accruing to the lands when actually under cultivation and on a production basis would be equal to at least an average of $50. per acre. The estimates of the Real Estate Board of the values prior to the expiration of the first period is higher than the values used as a basis of this report.

14.--Relation of Values to Bond Issue

At the end of the first financing the value of the lands and properties which will be security for the bond issue would be approximately four times the face of the bonds then outstanding. Approximately the same relationship would also exist at the end of the final period of construction.

Every phase of the proposed project has been thoroughly investigated and analyzed, particular attention having been given to those elements which are fundamental to its success. The status, rate of development and prosperity of similar projects, organized and developed under similar conditions, have been studied in order to determine the soundness of the conclusions of this report, based upon the program of construction and development outlined herein, and taking all these matters into consideration, we feel every confidence in unhesitatingly recommending this project as physically and economically feasible and financially sound.

Respectfully submitted,

THE LOVELAND ENGINEERS, INC.,

By Chester H Loveland
President.

VOLUME I

ECONOMIC FEATURES AND POTENTIAL DEVELOPMENT VALUES

OF THE

ROOSEVELT IRRIGATION DISTRICT

February---1927

THIS DOCUMENT IS THE PROPERTY OF THE DEPARTMENT OF LIBRARY AND ARCHIVES — ARIZONA —
NUMBER 53966
RECEIVED DEC-1 '48

THE LOVELAND ENGINEERS, INC.
San Francisco - Los Angeles.

E--Inasmuch as Association does not desire to construct a steam driven electrical generating plant, it is understood and agreed that paragraphs 10 and 12 of said 1921 agreement be and the same are hereby abrogated and annulled.

F--Inasmuch as District ditches have been located and therefore the amount of waste and pumped waters granted and released to District by paragraph 2 of the 1921 agreement is more definitely determined, it is hereby understood and agreed that there shall be added to said paragraph 2 of the 1921 agreement the following provisions:

(a) Water referred to in this paragraph shall not be construed to mean any water pumped from underground sources by the District. Association shall co-operate with District in controlling such waste and pumped waters insofar as that may be practicable so as to enable District to collect in its ditches so much of said waters as the District may be able to put to beneficial use and in notifying District from time to time of the amount of such water that will probably be available to District to the end that as much of said waste and pumped water may be put to beneficial use by District as is reasonably practical.

(b) Association may if it so desires, divert at District Pumping plants where facilities exist for effecting such diversion, or divert and take out of District's ditches, water pumped by District from District wells and instead of the waters so diverted, simultaneously deliver to District, an equal quantity of water pumped by Association, without cost or expense to District, at point or points in District ditches where said ditches are of sufficient capacity to convey said water and where the losses of water in District's ditches by seepage or otherwise in transmitting said pumped water to the area to be irrigated within District will not exceed the losses which would have occurred if said exchange of pumped waters had not been made.

(c) Association shall give written notice to District of the time and place of delivery or deliveries of said pumped water which Association desires to take. Said notice to be reasonably sufficient to enable District to regulate the production and transmission of water from other sources to the end that such quantity of water as is required by the District shall be transmitted to the lands irrigated.

G--Paragraph 11 of the 1921 agreement is hereby amended to read as follows:

Inasmuch as the Association wastes water from its power plants during certain flood periods, such waste water being at times in excess of the amount which can be put to beneficial use on lands of the Association and such excess water being therefore available to the District at certain of its proposed ditches, the Association agrees to deliver to the District such portion of said excess as can not be put to beneficial use on Association lands and can be put to beneficial use on lands of the District. The District agrees to accept such water and water released to the District pursuant to the terms of Paragraph 2 of said 1921 agreement and to pay therefor at the rate of seventy-five cents ($0.75) per acre foot. Payment for water furnished as above provided shall be due and payable and subject to the payment of interest as provided in Section (15g) of this agreement. The wasting of water delivered by the Association on order to the District at the Agua Fria crossing or elsewhere, due to necessity arising in ordinary operation or emergency, shall not relieve the District from its obligation to p y for all water so wasted as though the same had been put to beneficial use.

If at any time the District is in arrears in meeting the minumum annual pumping requirement fixed by Section (8-d) hereof, so that, in the judgment of the Association, project lands are being damaged or threatened with damage due to inadequate drainage, the Association may, at such times as the District is pumping less than 150 second feet from its own pumping plants, decline to deliver waste, flood, pumped or other water as in this section hereof and Paragraph 2 of the 1921 agreement provided.

Nothing herein or in the 1921 agreement shall be so construed as to obligate the Association to deliver to the District any water to which any other person, corporation or District may have a legal right.

H--Inasmuch as it appears desirable that Association, instead of District, construct any necessary alterations in its transmission lines for the purpose of delivering power to District, and at District's expense, and that rules and regulations governing the delivery of power testing of meters, etc., be definitely determined, it is hereby understood and agreed that Paragraphs 15 and 17 of said 1921

agreement be altered and amended to read as follows:

(15-a) The point or points of delivery of electrical energy shall be the high voltage side of the transformer at each installation or pump plant.

(15-b) All electrical power delivered by Association to District shall be measured by standard recording watt-hour metering equipment to be installed on the lower voltage side of the transformer, such metering equipment to be installed by Association at expense of District.

(15-c) In determining the amount of energy for which payment shall be made, three per cent (3%) shall be added to the quantity registered by each meter to cover transformer and other losses from the point of delivery to the meters.

(15-d) Meters shall be tested and sealed by a representative of Association, and thereafter the recordation of the amount of electrical energy delivered shall be accepted as correct, except in case any meter or meters shall become inoperative in whole or in part, and/or any instances there may be where meters are found to be recording inaccurately, in which events the record of power consumption during a similar period of similar use and/or the results of tests of the meters affected shall govern.

(15-e) District shall have the right at any time, upon payment of the expense thereof, to have the accuracy of any or all meters tested. In the event any such test shall show that recordation varies more than two per cent (2%) from the correct amount, adjustment shall be made upon the basis of the amount computed in accordance with the results of the test, taking into consideration the amount and period of inaccuracy, but in no event shall an adjustment be made covering a longer period than six (6) months. It is understood that Association may, at its own expense, test any or all metering equipment as often as it may desire upon twenty-four (24) hours' notice to District.

(15-f) It is understood and agreed that at all times when any of District's pump plants are not operating, the power transformer or transformers at said pump plant or plants, shall be disconnected from the service power line. If District at any time fails to so disconnect said transformer or transformers from the service power line at any of its pump plants, it shall pay to Association an additional charge of One Dollar ($1.00) per day or fraction thereof, for each delivery point for each day such disconnection has not been made.

(15-g) All payments for power herein provided to be made shall be computed and charged on July 1st and January 1st of each year for all power furnished hereunder during the six (6) months' period preceding each such date and payments shall become due and payable within fifteen (15) days after bill to District has been deposited in the United States Mail. If said payments are not made when due, District shall pay interest thereon at the rate of eight per cent (8%) per annum to Association.

(15-h) Association may, when necessary and without recompense to District, but with due regard for the interest of District, suspend service for the purpose of making alterations or repairs, upon giving District forty-eight (48) hours' written notice. In cases of emergency, where it is impossible to give the required notice, Association shall exercise diligence in giving all possible notice of impending suspension of service and shall use every reasonable effort to renew service with the least possible delay.

(15-i) Association agrees that when and as District desires electric service for wells to be constructed by it hereunder, in addition to those purchased from Association, that Association will make any changes which may be necessary in its existing transmission lines, switching, transformer or other equipment, and will install or construct all transmission lines for conveying said electrical energy from the nearest lines of Association to point or points of delivery to District, all transformers, meters and all equipment or construction of every kind whatsoever necessary to make the delivery of said electric energy effective, said equipment to be of a character which shall correspond to standard practice in use by Association in connection with similar work of the Salt River Project. All said changes and construction work shall be at the expenses of District and shall be in accordance with the plans and methods approved by Association.

(15-j) Whenever District shall desire Association to deliver electric energy to an additional plant or plants, it shall notify Association to that effect in writing, and Association shall make a written estimate of the cost of such construction or change and shall commence and complete the same or such part thereof as may be designated by District, as speedily as practicable after District shall have ordered said construction or change and the estimated cost of

such work shall have been deposited by District with Association.

(15-k) In the event the amount deposited is insufficient to defray the cost of said construction, Association shall not be obligated to continue such construction beyond the part of said work for which the amount so paid shall be adequate until and unless District shall deposit an additional amount equal to the estimated cost of completing said construction.

(15-l) In the event Association shall complete all or any portion of said construction and it shall then be found that the cost thereof shall have exceeded the total amount theretofore paid by District, a statement of such excess costs shall be rendered to District by Association as soon as practicable, and the amount due Association shall thereupon be paid by District.

(15-m) In the event the said sums deposited by District with Association for construction as herein provided, with other sums, if any, deposited for that purpose, shall exceed the costs of said construction, Association agrees to refund the difference within sixty (60) days after such total costs shall have been determined.

(15-n) In the event Association shall deem it necessary or advisable to increase the capacity of any present transmission lines, transformers, substations or appurtenances of the Association within the area described in paragraphs 20 and 21 of the 1921 agreement, including the Phoenix Sub-Station, to meet the purposes of District, the increase shall provide for one-third (1/3) greater capacity than that necessary to deliver the power required by District, and District shall pay for such increased capacity in the manner set out above, provided, however, that one-third (1/3) of the moneys expended by District in the reconstruction and/or construction of said transmission lines shall be refunded to District in the following manner:- District may apply the amount due it as a credit on any or all moneys due Association from it until credited with the full amount.

(15-o) All electrical equipment and appurtenant facilities constructed for use by Association in delivering power to the point or points of delivery as defined herein, shall be and become the property of Association and all other electrical equipment shall be and remain the property of the District. The methods of

operation contemplated herein shall conform to and be no more exacting than standard practice in use by Association in connection with similar work of the Salt River Project.

1.--Because of changed conditions since the execution of the 1921 agreement, it is understood and agreed that the following supplemental paragraphs be, and the same are hereby incorporated in the agreement between the parties hereto;

(a) If District shall fail, neglect or refuse to pay to Association any moneys due it within thirty (30) days after bill has been rendered, Association may, at its option, thereafter upon thirty (30) days' written notice shut off all supple of power and/or water until such bill is paid, and upon the expiration of sixty (60) days from due date of bill, if same remains unpaid, the Association may, at its option, take over the operation and management of such wells, pumps, canals, ditches and other instrumentalities, and may continue to operate and manage the same for its own purposes, and without delivering the water produced thereby to District or to the lands within the District. Association shall, however, return to District all such works and the control, operation and management thereof, upon payment by District of all unpaid bills due Association and all expenses incurred by Association in operating and maintaining said works, so taken over by Association, together with interest thereon at the rate of six per cent (6%) per annum from the due dates as set out herein.

In the event that the District shall, without the consent of the Association, at any time be in arrears in the matter of pumping the minimum annual pumping requirement as provided in Section (8-d) hereof, and if the District shall, upon demand of the Association, fail to operate its pumping plants in such manner as the Association may direct in order to make up such arrears, the Association may, at its option, at the expiration of ten days, written notice to the District, take over the operation and management of District works as hereinabove provided and may continue such operation and management until such time as the pumping requirements of said Section 8-d hereof shall have been met for the year during which such deficiency occurred and for the prorata part of the year then current, at which time said works shall be turned back to the District. The operation of the District's pumping plants under such conditions shall be as the Association may find to be best adapted to meet drain-

age requirements of the Association lands; provided that the Association will at all times under such circumstances deliver to the District out of water so pumped, an amount of water sufficient for the District requirements, and will endeavor as nearly as may be practicable, to pump from the District works sufficient water for such requirements. The cost of such operation by the Association shall be paid by the District within thirty days after the rendering of statements by the Association such statements to be rendered at the end of each month.

In the event of failure on the part of the District to pay such bills when due, the Association shall have the right, at its option, at the expiration of thirty (30) days from due date of bill, to operate the District works for its own purposes and without delivering any water produced thereby to the District or District lands until all upaid bills due the Association, with interest at the rate of six per cent (6%) per annum, and all expenses incurred by the Association in connection with such operation, shall have been paid.

(b) The remedies herein provided, in case of failure to comply with this agreement, shall be cumulative and not exclusive, and shall not prevent the enforcement of this agreement by appropriate action of the Courts.

(c) In event District fails to vote or sell bonds for the purpose of providing moneys for the purchase of properties as provided herein, and for the construction of an irrigation system to deliver water for the irrigation of lands within the District within two (2) years from the date hereof and any extensions thereof granted by the Association, then and in that event this contract shall be and become null and void and of no further force and effect.

(d) This agreement shall not become effective until it shall have been submitted to and approved by the Secretary of the Interior of the United States, such approval to be signified by endorsement hereon, and when so approved it shall become effective as of the date of such approval. Whenever in this agreement reference is made to the date or effective date thereof, it shall be construed to mean the effective date as fixed by the approval of the Secretary of the Interior.

(e) This agreement shall extend to and be binding upon the successors and assigns of the parties hereto.

(f) "Written Notice" asused herein is defined to mean either delivery through the United States Mail or

otherwise to the office of the party so to be notified.

(g) It is understood and agreed that that certain agreement dated August 25, 1921, by and between Salt River Valley Water Users' Association and The Carrick and Maughan Agua Fria Lands and Irrigatiin Company, whose rights thereunder have been assigned and transferred to District, remains in full force and effect, except as altered and amended by this supplemental agreement, and that in event any conflict shall be found to exist or incongruity arise as between these two (2) agreements, it is understood that the terms and conditions of this Supplemental Agreement shall govern and control.

This agreement is executed by the President and Secretary of the party of the second part by virtue of the authority conferred upon it by the Board of Governors at a meeting duly called and held on the Twenty-second day of November, 1926, and by the President and Secretary of the party of the first part hereunto duly authorized by the resolution of its Board of Directors adopted at a meeting of said Board lawfully held on the First day of February, 1927.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed in their respective corporate names by their duly authorized officers the day and year first above written.

(S E A L)

ROOSEVELT IRRIGATION DISTRICT

By S. Carl Miller (Sgd.)
President

By H. A. Lytle (Sgd.)
Secretary

SALT RIVER VALLEY WATER USERS' ASSOCIATION

By F. A. Reid (Sgd.)
President

(S E A L)

By F. C. Henshaw (Sgd.)
Secretary

Approved C. C. Cragin (Sgd.)
C. C. Cragin, Second Assistant Commissioner,

Approved J. L. Gust (Sgd.)
J. L. Gust, Legal Adviser, S. R. V. W. U. A.

Approved, Feb. 12, 1927.
on condition that the amendment of paragraph 7 of the 1921 agreement, page 5 hereof, shall be construed as providing for the possession of and use by the district of the ditches, if any, shown on page 7 of Exhibit "B", the title to which stands in the name of the United States. No transfer of title to such ditches is authorized or intended.

F. C. Finney (Sgd.)
First Assistant Secretary of the Interior.

ROOSEVELT IRRIGATION DISTRICT

Exhibit "A"

Power contracts of the Association prior in right for power Service from the power plants of the Association to that of the District.

Inspiration Consolidated Copper Co.	- All the power generated at the Horse Mesa Plant according to the Inspiration Contract.
Magma Copper Co.	- All the power generated at the Chandler Power Plant
Southwest Cotton Co. Marinette	- 800 KW.
Central ArizonalLight & Power Co. (Expires May 3, 1930)	- 2500 Kw. plus the output of the Mormon Flat Power Plant.
Tempe Milling Co.	- 60 KW.
Chandler Improvement Co.	- 300 KW.
Sacaton Indian Agency	- 746 KW.
Other Power Requirements of the Salt River Project on equality with this contract at present, including operation of pumps to be transferred in this Contract.	- 6000 KW.

SUPPLEMENTAL AGREEMENT

ROOSEVELT IRRIGATION DISTRICT

THIS AGREEMENT, made in triplicate and entered into this 3rd day of February, 1927, by and between the ROOSEVELT IRRIGATION DISTRICT, an irrigation district duly organized and existing under the laws of the State of Arizona, having its office and principal place of business in the City of Phoenix, Arizona, party of the first part, hereinafter called DISTRICT, and the SALT RIVER VALLEY WATER USERS' ASSOCIATION, a corporation organized and existing under the laws of the State of Arizona, having its office and principal place of business in the said City of Phoenix, party of the second part, hereinafter called ASSOCIATION.

WITNESSETH:-

WHEREAS, on August 25, 1921, a certain agreement was entered into by and between Association and Carrick & Mangham Agua Fria Lands and Irrigation Company, a corporation, organized and existing under the laws of the State of Arizona, hereinafter referred to as the 1921 agreement, under the terms of which said company was given the right under certain conditions to pump and transmit certain waste and drainage waters from within the boundaries of the Salt River Project to the lands which are now a part of the area included in District, and which waters were to be used for the irrigation of said lands; and

WHEREAS, it is provided therein that said agreement might be assigned to an Irrigation District to be later organiz-

ed; and

WHEREAS, said District, known as the Roosevelt Irrigation District, has been organized, and said agreement has been assigned to said District and is now in full force and effect; and

WHEREAS, the plans of District for the construction of an irrigation system have been approved by the State Certification Board of Arizona, its collection canals have been definitely located, the equipment to be acquired by District from Association has been inventoried and appraised, and conditions obtaining at the time of the execution of said 1921 contract have changed, and

WHEREAS, Association has developed and acquired its hydro-electric and other sources of supply of electrical energy to such an extent that it would be uneconomic and undesirable for it to borrow money at seven per cent (7%) interest to construct a steam plant, as provided in said 1921 contract, and

WHEREAS, additional drainage of the areas described in paragraphs 20 and 21 of said 1921 agreement would be beneficial to Association and would provide a needed increased available water supply to District, and

WHEREAS, it would be mutually beneficial to the parties hereto, in that material economies and benefits in operation would accrue to Association, on the one hand and District, on the other hand, would be in position to more economically and efficiently finance, construct and operate its proposed system, if the said 1921 agreement be amended and altered to conform to changed conditions which apply as of this time,

NOW, THEREFORE, the said parties hereto, in considera-

tion of the covenants and agreements herein contained upon the part of the respective parties to be kept and performed, do hereby covenant and agree to and with each other as follows:

A--Inasmuch as Association will benefit by having an additional area drained, and District will be enabled to obtain the additional water supply which it needs for its development, and it is mutually advantageous to include within the so-called pumping area referred to in Paragraph 1 of said 1921 agreement, the area described in Paragraph 21 as well as that described in Paragraph 20, without the restrictions set out in Paragraph 3, it is understood and agreed that wherever the phrase "lands described in paragraph 20" appears in said 1921 agreement, that said phrase shall be understood to mean all those lands described in paragraphs 20 and 21 of said 1921 agreement, and that paragraph 3 of said 1921 agreement shall be abrogated and set aside as of no further use, force or effect.

B--Inasmuch as it is desirable and mutually beneficial to the parties hereto that a fixed rate for hydro-electric energy be established for a period equal to the life of District's bonds, i.e., thirty (30) years, it is understood and agreed that paragraph 5 of said 1921 agreement shall be altered to read as follows:

> (5-a) Association further covenants and agrees that it will furnish and sell to District, and District agrees to purchase from Association, during a period of ninety-nine (99) years from the effective date hereof, all hydro-electric power as hereinafter provided, which may be necessary for pumping water from any and all wells to be acquired and hereafter constructed pursuant to the terms of this agreement at the following rates, to-wit:

For a period of thirty (30) years from the effective date hereof all hydro-electric energy shall be sold by Association to District and District shall pay for same at the rate of three quarters of one cent ($0.0075) per Kilowatt Hour (KWH) at the points of use and under the conditions defined herein.

From and after the expiration of the period last aforesaid, the rate to be paid for said electric energy by District shall be the fair market value for similar service.

(5-b) It is understood and agreed that the hydro-electric power to be furnished shall be from Association's available supply and that when hydro-electric energy is not available the Association shall supply power from other sources as at that time are available to the Association, and District shall pay for same at actual cost. The term "actual cost" as used herein for power purchased or supplied from any source other than the hydro-electric power plants of the Association shall be construed to mean cost of producing and/or purchasing and delivering such electrical energy under whatever system Association may be operating at the time, and shall include interest on the investment made by Association or by the United States of America, operation and maintenance and proper allowance for depreciation on any capital investment made for such power supplied other than hydro-electric power.

It is understood and agreed that the term "available supply" as herein used shall mean the hydro-electric power available from the Association's power system after fulfilling all superior requirements of the Association for project use in accordance with the immediately succeeding paragraph, and all obligations of the Association arising out of contracts for the furnishing of electrical energy entered into by the Association prior to the effective date of the 1921 agreement or out of renewals of such contracts, and after fulfilling now existing contractual obligations of the Association for supplying electrical energy from power plants constructed subsequent to the effective date of the 1921 agreement or from power plants now under construction. All contracts imposing contractual obligations upon the Association for supplying hydro-electric power from the Association's power system or any part thereof prior and superior to the obligation of the Association

to deliver power to the District under this contract are listed in Exhibit "A" hereto attached.

Inasmuch as the main purpose of the Association in entering into this contract is to provide for the economical drainage of project lands, all use of power under this contract shall be deemed a project use and shall be on an equality with the use of power by the Association for draining other project lands and such use of power for draining project lands shall be superior to all other project uses except the use of electricity for necessary lighting of project works and except the use of electricity to pump water for the irrigation of project lands when deemed necessary by the Board of Governors. The use of electricity for the said two last mentioned purposes shall be deemed superior to use for drainage purposes.

C--Inasmuch as the pumps, wells and equipment appurtenant thereto, which are to be purchased from Association by District, have now been definitely described and appraised, it is understood and agreed that paragraph 7 of said 1921 agreement shall be altered and amended to read as follows:

(7) Upon receipt of the price of same as in this paragraph specified, the Association covenants and agrees to sell and convey to District, by good and sufficient instruments of transfer and conveyance, free and clear of all liens and encumbrances and District agrees to purchase and pay for all right, title, claim and interest which the Association has in and to certain twenty-six (26) pumping plants consisting of wells with pumps, motors, houses, and appurtenant appliances and equipment, and certain ditches with appurtenant structures and connections for carrying water produced by said pumping plants, as more particularly set forth and described in "EXHIBIT B" attached hereto and made a part hereof, excepting from the property so conveyed, however, all headgates, ditches, connections and appliances appurtenant to any or all of said pumping plants or ditches which were constructed or which are or may be used for the delivery of water from any or all of said pumping plants or ditches to individual tracts or project land or to project ditches: the title to said headgates, ditches,

connections and appliances to remain in the Association and said headgates, ditches, connections and appliances to be left by the District in place and in condition for use in the event of it becoming necessary or desirable at any time to utilize them. The price to be paid for said wells, pumping plants, electrical and other equipment, appliances, ditches and other property described in said "EXHIBIT B" shall be the sum of Two Hundred and Twenty-two Thousand ($222,000.00) Dollars.

The said total sum of Two Hundred Twenty-two Thousand and No/100 - - - - Dollars ($222,000.00) shall be and become due and payable not more than sixty (60) days after the receipt by the District of the proceeds of the sale of the first issue of bonds by District, provided, however, that the operation of said facilities, to the extent desired by Association, and their repair and maintenance, to the end that their present physical condition shall not be impaired (ordinary wear and tear only being excepted), shall be continued by Association, at its expense, until such time as District shall have completed its proposed conduit for the conveyance of said water across Agua Fria River, whereupon District shall notify Association in writing and fifteen (15) days after the date of said written notice District shall take over and operate said facilities pursuant to the terms of this agreement.

D--Inasmuch as it would be uneconomical and wasteful of District's money to immediately construct and install all of the wells and pump plants needed to irrigate its entire area when fully developed, and as such immediate construction would not benefit Association, it is understood and agreed that paragraphs 8 and 9 of said 1921 agreement are altered and amended to read as follows:

(8-a) District covenants and agrees to build and construct at its expense such canals, ditches and other works as may be necessary or advisable to collect the waters pumped from the area described in said paragraphs 20 and 21 of said 1921 agreement, and to convey the said waters to the lands to be irrigated by District

and to complete said canals and other works within three (3) years from the effective date hereof. The necessary engineering work in connection with the construction of the canals, ditches and other works hereinbefore mentioned shall be commenced immediately upon the approval of this contract for the Secretary of the Interior, or prior to such approval if District desires.

(8-b) District agrees that it will, within one (1) year from the effective date of this agreement, submit to Association for its approval, maps, plans and specifications setting forth the general location of wells, pumping plants, collection and transmission ditches and the principal ditches or canals proposed for the irrigation of lands within the boundaries of the District, together with the general methods to be employed in the construction of such structures and works. The written approval of the Association shall be secured before commencement of construction.

(8-c) It is further agreed that District may make any reasonable changes in location, plans, specifications or methods of construction after their approval by Association, provided that same are necessitated by difficulties in securing rights-of-way or easements for the location of wells, pumping plants, collection or transmission mains or other facilities or by changes in general methods of operation or construction of facilities for the production, collection, transmission or distribution of water, or by reason of other circumstances or conditions which may develop hereafter. Such reasonable changes shall be subject to the written approval of the Association.

(8-d) In order to fix a basis for the determination of the drainage requirements of the area described in paragraphs 20 and 21 of the 1921 agreement which are to be taken care of by the District as a part of its obligation hereunder, it is hereby stipulated and agreed by the parties hereto that such drainage requirements shall consist of the pumping and removal from said area of not less than 85,000 acre feet of water per annum.

The District shall be allowed ten years from the effective date hereof within which to complete all its development work and bring all the lands of the District into cultivation, such ultimate area being assumed and fixed for the

purposes of this agreement, at 35,000 acres.

From and after the expiration of said ten year period, the District agrees to pump and remove from said area a minimum quantity of not less than 85,000 acre feet of water per annum over and above all other water it may have received from the Association, whether or not all of said 85,000 acre feet may be needed by it for irrigation of District lands; the said minimum annual pumping requirement at no time to be reduced without the consent of the Association except in the event of failure to pump such minimum due to fault of the Association. In the event of failure in any year to pump the said minimum requirement due to fault of the Association, the minimum pumping requirement for that year shall be reduced by the amount of the deficiency due to the fault of the Association. If at any time, in the judgment of the Association, the drainage requirements of the project will for the time being be adequately met by the pumping in any twelve months period of a lesser quantity than the minimum requirement above fixed, the said minimum requirement for said twelve months period may be established at a lesser amount upon written consent of the Association. Wherever in this agreement the expression "Minimum annual pumping requirement" is used, it shall be held to mean the minimum quantity of water which the District is required hereunder to pump and remove from the said area in a twelve months period, with modifications, if any shall have been made, as provided herein.

From and after the date fixed in the foregoing Section (8-a) for the completion of District works so as to serve water to District lands, namely, three years from the effective date hereof, the District agrees that it will, during the seven years following, pump and remove from the said area in any year of said seven year period, the number of acre feet of water which shall bear to the number of acres of District lands which shall have been brought into cultivation up to the end of that year the same proportion which 85,000 bears to 35,000. The quantity so determined shall constitute the minimum pumping requirement for that particular year and shall be subject to modification with the consent of the Association or due to fault of the Association, in the manner provided in the immediately preceding paragraph hereof.

whenever, in the judgment of the Association, the proper drainage of any portion of the said area requires that more water be pumped therefrom than from other portions of said area, the District agrees to operate such of its pumps as may be designated by the Association within said portion of said area, such pumps to be operated as nearly as may be practicable in accordance with the request of the Association. The District agrees to supply its needs as far as possible from such pumps as may be designated by the Association under such circumstances before drawing upon other sources of water;

PROVIDED, that the District shall not be obligated under this section, to pump a greater volume of water from all of its pumps combined than 150 second feet, or to pump a greater quantity of water in any one year than the minumum pumping requirement as fixed in Section (8-d) hereof.

Unless otherwise directed by the Association as in this section specified, the District shall operate all pumps owned or operated by it approximately an equal number of hours per annum.

The District agrees to keep such reasonable operating records as the Association may require to provide the necessary information to insure the fulfillment of this contract and the plants and records of the District shall be open for inspection by the Association at all reasonable times.

Association shall have the right to operate at Association's expense, any of the aforesaid pumps for drainage purposes at any time District may not desire to operate the same and to make such use as it may see fit of the water pumped by said pumps while so operated by the Association. Association shall have the right to use excess capacity of the ditches of District not required for District purposes to carry out of the project any water pumped for drainage purposes by the Association.

(8-e) The use of water within the District for irrigation or for any other purposes beneficial to the lands, landowners, or residents within the District shall be construed as "beneficial use" as said expression is used herein.

Item #1 Pumping Plant 4E--12N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the South 58 feet of the East 103 feet of the Southeast Quarter of the Southeast Quarter of Section 34, Township 3 North, Range 1 East.

Item #2 Pumping Plant 2½E--12N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 83 feet of the East 50 feet of the Northwest Quarter of the Northwest Quarter of Section 4, Township 2 North, Range 1 East.

Item #3 Pumping Plant 2E--11½N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 50 feet of the West 83 feet of the Northwest Quarter of the Southwest Quarter of Section 4, Township 2 North, Range 1 East.

Item #4 Pumping Plant 3E--11½N

and appurtenances, with well-site described as follows:
A tract of land situated in Section 4, Township 2 North, Range 1 East, described as follows:
Beginning at the Southeast corner of said tract, thirty-three (33) feet West of the East Quarter corner of said Section 4, thence North thirty-six (36) feet to the Northeast corner of tract, thence West thirty (30) feet to the Northwest corner, thence South thirty-six (36) feet to the Southwest corner, thence East thirty (30) feet to the point of beginning, containing Twenty-five Thousandths (0.025) acre, more or less.

Item #5 Pumping Plant 2E--11N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 83 feet of the West 83 feet of the Northwest Quarter of the Northwest Quarter of Section 9, Township 2 North, Range 1 East.

Item #6 Pumping Plant 2E--10½N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 50 feet of the West 83 feet of the Northwest Quarter of the Southwest Quarter of Section 9, Township 2 North, Range 1 East.

Item #7 Pumping Plant 1½E--10N

and appurtenances, with well-site described as follows:
The South 50 feet of the North 74 feet of the West 50 feet of the East 455 feet of the Northwest Quarter of Section 17, Township 2 North, Range 1 East.

Item #8 Pumping Plant 1E--9N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 83 feet of the West 83 feet of the Northwest Quarter of the Northwest Quarter of Section 20, Township 2 North, Range 1 East.

Item #9 Pumping Plant 1E--8N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the South 83 feet of the West 83 feet of the Southwest Quarter of the Southwest Quarter of Section 20, Township 2 North, Range 1 East.

Item #10 Pumping Plant 2E--6N

and appurtenances, with well-site described as follows:
Beginning at the Southeast corner said tract, which corner is thirty-three (33) feet due North of a point thirty-four (34) feet due West of the Southeast corner of Section 32, Township 2 North, Range 1 East, Gila and Salt River Base and Meridian; thence due West thirty (30) feet to the Southwest cornerssaid tract, thence due North twenty-five (25) feet to the Northwest corner said tract, thence due East thirty (30) feet to the Northeast corner said tract, thence due South twenty-five (25) feet to the Southeast corner said tract, to the point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #11 Pumping Plant 3E--6N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 98 feet of the East 98 feet of the Northeast Quarter of the Northeast Quarter of Section 4, Township 1 North, Range 1 East.

Item #12 Pumping Plant 4E--6N

and appurtenances, with well-site described as follows:
All, excepting that part occupied by the County Road, of the North 83 feet of the West 83 feet of the Northwest Quarter of the Northwest Quarter of Section 2, Township 1 North, Range 1 East.

Item #13 Pumping Plant 5E--5N

and appurtenances, with well-site described as follows:
Using as a base the line between the North Quarter corner and the Northwest corner of Section 12, Township 1 North, Range 1 East, based on a magnetic bearing of South 89° 40' West, beginning at the Northwest corner said tract, which is thirty-three (33) feet North 89° 40' East from a point thirty-eight (38) feet South 0° 20' East from the Northwest corner of Northwest corner of said Section 12, thence North 89° 40' East twenty-five (25) feet to the Northeast corner said tract, thence South 0° 20' East thirty (30) feet to the Southeast corner said tract, thence South 89° 40' West twenty-five (25) feet to the Southwest corner said tract, thence North 0° 20' West thirty (30) feet to the Northwest corner said tract, the point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #14 Pumping Plant 6E--5N

and appurtenances, with well-site described as follows:
Beginning at the Northwest corner said tract, which corner is fifty-five (55) feet South of a point on the North line of Section 7, Township 1 North, Range 2 East, distant 208.71 feet East from the North-west corner of said Section, thence East twenty-five (25) feet to the Northeast corner, thence South thirty (30) feet to the Southeast corner, thence West twenty-five (25) feet to the Southwest corner, thence North thirty (30) feet to the Northwest corner, the point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #15 Pumping Plant 7E--5N

and appurtenances, with well-site described as follows:
Using as a base the line between the South Quarter corner of Section 6, Township 1 North, Range 2 East and Northwest corner of said Section 8 of said Township, based on a magnetic bearing of South 89° 36' West, beginning at the Northwest corner said tract, said corner being thrity-three (33) feet North 89° 38' East of a point 52.5 feet South 0° 22' East from Northwest corner said Section 8, thence North 89° 38' East twenty-five (25) feet to the Northeast corner said tract, thence South 0° 22' East thirty (30) feet to the Southeast corner said tract, thence South 89° 38' West twenty-five (25) feet to the Southwest corner said tract, thence North 0° 22' West thirty (30) feet to the Northwest corner said tract, the point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #16 Pumping Plant 8E--5N

and appurtenances, with well-site described as follows:
Beginning at the Northwest corner which is fifty-three (53) feet South of a point on the North line of Section 9, Township 1 North, Range 2 East, distant 33 feet East of the Northwest corner of said Section 9; thence East twenty-five (25) feet to the Northeast corner, thence South thirty (30) feet to the Southeast corner, thence West twenty-five (25) feet to the Southwest corner, thence North thirty (30) feet to the Northwest corner the place of beginning,

containing Seventeen Thousandths (0.017) acre, more or less.

Item #17 Pumping Plant 9E--5N

and appurtenances, with well-site described as follows:
Using as a base the line between the South Quarter corner of Section 5, Township 1 North, Range 2 East, and the Northwest corner Section 9 of said Township, based on a magnetic bearing of South 89° 38' West, beginning at the Northwest corner said Section 9, thence North 89° 22' 30" East six hundred (600) feet, thence North 89° 23' East two thousand two hundred (2200) feet, thence North 89° 22' East sixteen hundred fifty-five and eight tenths (1655.8) feet, thence South 0° 38' East seventy-five (75) feet to the true point of beginning, thence South 0° 38' East thirty (30) feet, thence South 89° 22' West Twenty-five (25) feet, thence North 0° 38' West thirty (30) feet, thence North 89° 22' East twenty-five (25) feet to the true point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #18 Pumping Plant 10E-5N

and appurtenances, with well-site described as follows:
Beginning at the Northeast corner of said tract, which corner is 53.0 feet North 89° 08' West of a point 83.0 feet South 0° 52' West of the Northeast corner of Section 10, Township 1 North, Range 2 East, based on a magnetic declination of 14° 22', thence South 0° 52' West thirty (30) feet to the Southeast corner of said tract, thence North 89° 08' West twenty-five (25) feet to the Southwest corner of said tract, thence North 0° 52' East thirty (30) feet to the Northwest corner of said tract, thence South 89° 08' East twenty-five (25) feet to the Northeast corner of said tract, the point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #19 Pumping Plant 11E--5N

and appurtenances, with well-site described as follows:
Beginning at the Northeast corner of said tract, which corner is 72.2 feet South of a point on the North line of Section 11, Township 1 North, Range 2 East, distant 605.95 feet West from the Northeast corner of said Section, thence South thirty (30) feet to the Southeast corner, thence West twenty-five (25) feet to the Southwest corner, thence North thirty (30) feet to the Northwest corner, and thence East twenty-five (25) feet to the Northeast corner, the place of beginning, containing Seventeen Thousand ths (0.017) acre, more or less.

Item #20 Pumping Plant 11½E--5N

and appurtenances, with well-site described as follows:
Beginning at the Northeast corner of said tract which corner is 20 feet South 88° 22' W. of point 77 feet South 1° 38' East from the North Quarter corner of Section 12, Township 1 North, Range 2 East, based on a magnetic declination of 14° 22', thence South 88° 22' West Twenty-five (25) feet to the Northwest corner of said tract, thence South 1° 38' East thirty (30) feet to Southwest corner said tract, thence North 88° 22' East twenty-five (25) feet to Southeast corner said tract, thence North 1° 38' West thirty (30) feet to the Northeast corner said tract, the point of beginning, containing Seventeen Thousand ths (0.017) acre, more or less. Above tract being in Lot One (1), Block One (1), Warren Tract, Section 12, Township 1 North, Range 2 East.

Item #21 Pumping Plant 11¼--3¾N

and appurtenances, with well-site described as follows:
The South 50 feet of the East 50 feet of the Northwest Quarter of the Northeast Quarter of Section 13, Township 1 North, Range 2 East.

Item #22 Pumping Plant 11E--3¾N

and appurtenances, with well-site described as follows:
The South 50 feet of all, excepting the portion occupied by the County Road, of the East 83 feet of the Northeast Quarter of the Northeast Quarter of Section 14, Township 1 North, Range 2 East containing Fifty-seven Thousand ths (0.057) acre, more or less.

Item #23 Pumping Plant 10E--3¾N

and appurtenances, with well-site described as follows:
The North 50 feet of all, excepting the portion occupied by the County Road, of the West 83 feet of the Southwest Quarter of the Northwest Quarter of Section 14, Township 1 North, Range 2 East, containing Fifty-seven Thousand ths (0.57) acre, more or less.

Item #24 Pumping Plant 9E--3½N

and appurtenances, with well-site described as follows:
The South 50 feet of all, excepting the portion occupied by the County Road, of the West 83 feet of the Southwest Quarter of the Northwest Quarter of Section 15, Township 1 North, Range 2 East, containing fifty-seven Thousand ths (0.057) acre, more or less.

Item #25 Pumping Plant 8E--3½N

and appurtenances, with well-site described as follows:
The North 50 feet of the South 140 feet of all, excepting the part occupied by the County Road, of the West 83 feet of the Southwest Quarter of the Northwest Quarter of Section 16, Township 1 North Range 2 East.

Item #26 Pumping Plant 12½E--3½N

and appurtenances, with well-site described as follows: Tract of land Fifty (50) feet Square described as follows: Commencing at a point 30 feet West and 30 feet North of the Southeast corner of the Northeast Quarter of the Northwest Quarter of Section 18, Township 1 North, Range 3 East, Gila and Salt River Base and Meridian, thence Westerly parallel to the South line of said Northeast Quarter of said Northwest Quarter a distance of fifty (50) feet to a point 80 feet West and 30 feet North of the said Southeast corner of said Northeast Quarter of said Northwest Quarter, thence Northerly a distance of fifty (50) feet to a point, said point being 80 feet West and 80 feet North of said Southeast corner of said Northeast Quarter of said Northwest Quarter, thence Easterly a distance of fifty (50) feet to a point 30 feet West and 80 feet North of said Southeast corner of said Northeast Quarter of said Northwest Quarter, thence Southerly a distance of fifty (50) feet more or less to the place of beginning.

APPROXIMATELY 15½ MILES OF
PUMP LATERALS TO BE SOLD TO DISTRICT

(a) 1/2 mile of existing Pump lateral, extending, from NW Cor. Section 4, Township 2 North, Range 1 East, South along East line of County Road to W½ Corner of said Section 4.

(b) 1½ miles of existing Pump Lateral, extending from Pumping Plant 4E-12W West 3/8 miles along North line of County Road, thence Southwesterly through Section 3, Township 2 North, Range 1 East to a point approximately 1/4 mile North of the SW Corner of said Section 3.

(c) 1½ miles of existing Pump Lateral, extending from SE Corner Section 4, Township 2 North, Range 1 East, 3/4 mile west along North line of County Road, thence Southwesterly through Section 9 of said Township to a point approximately 450 feet North of W½ Corner of said Section 9.

(d) 1/2 mile of existing Pump Lateral, extending from NW Corner Section 9, Township 2 North, Range 1 East, South along East line of County Road to point approximately 450 feet North of W½ Corner of said Section 9.

(e) 1 mile of existing Pump Lateral, extending from NW Corner Section 2, Township 1 North, Range 1 East, South along East line of County Road to SW Corner of said Section 2.

(f) 4 miles of existing Pump Lateral, extending from SE Corner Section 3, Township 1 North, Range 2 East, west along North line of County Road to SW Corner Section 2, Township 1, North, Range 1 East.

(g) 1½ miles of existing Pump Lateral, extending from NW Corner Section 10, Township 1 North, Range 2 East, South along East line of County Road to a point approximately 1/4 mile North of SW Corner Section 15 of said Township.

(h) 2 miles of existing Pump Lateral, extending from NW Corner Section 11, Township 1 North, Range 2 East, South along East line of County Road to SE Corner Section 14 of said Townhhip.

(i) 2½ miles of existing Pump Lateral, extending from N½ Corner Section 12, Township 1 North, Range 2 East, West along South line of County Road to NW Corner of said Section 12, thence South along East line of County Road to SW Corner of said Section 12, thence South approximately 300 feet along west line of County Road, thence South along east line of County Road to SW Corner Section 13 of said Township.

(j) 1 mile of existing Pump Lateral, extending from Pumping Plant 11½E-3½N in the NE½ of Section 13, Township 1 North, Range 2 East, West approximately 1/4 mile, thence South approximately 1/4 mile to center of said Section and thence West to W½ Corner of said Section 13.

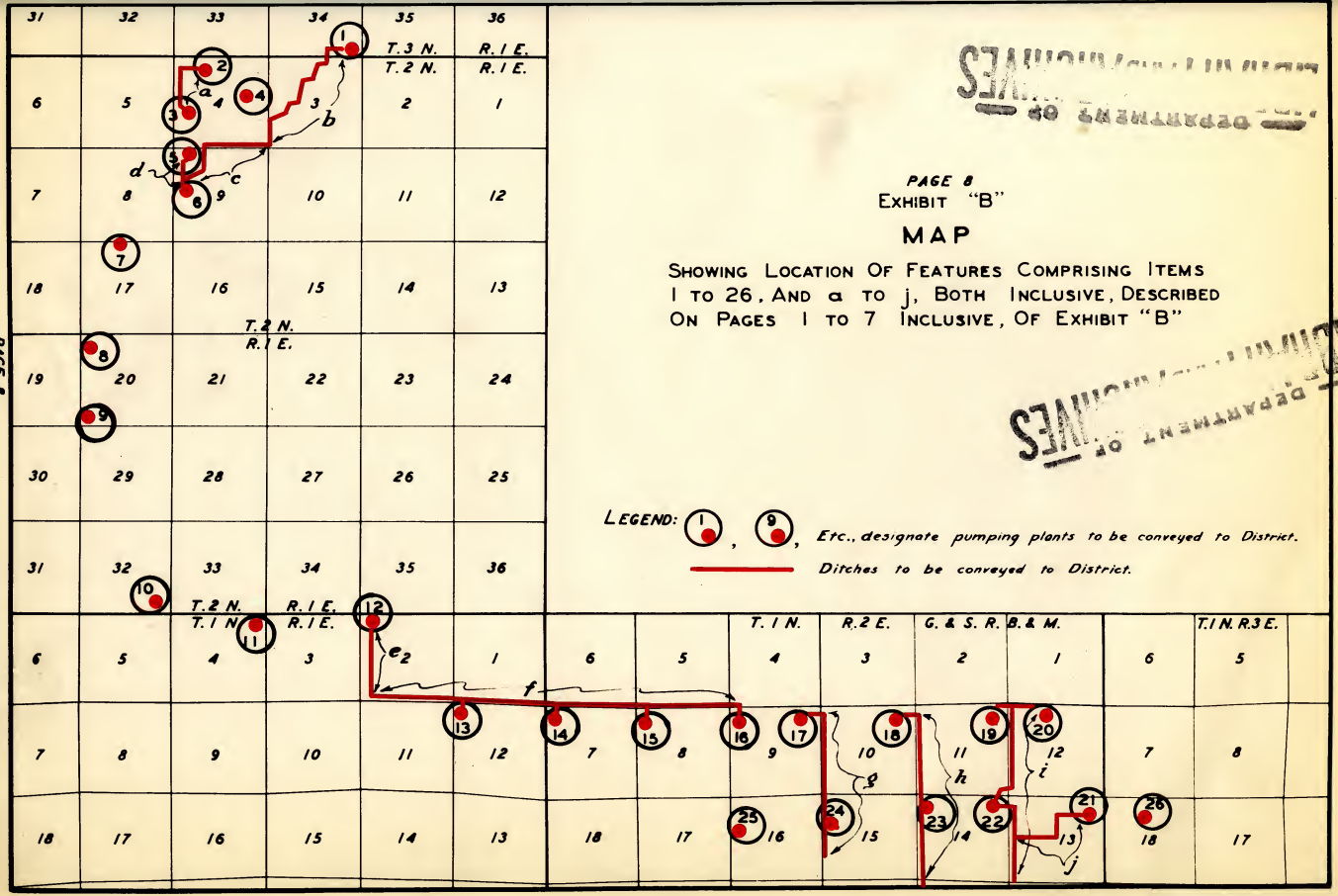
DEPARTMENT OF JUSTICE

PAGE 8
EXHIBIT "B"

MAP

SHOWING LOCATION OF FEATURES COMPRISING ITEMS 1 TO 26, AND a TO j, BOTH INCLUSIVE, DESCRIBED ON PAGES 1 TO 7 INCLUSIVE, OF EXHIBIT "B"

DEPARTMENT OF JUSTICE



LEGEND: (1), (9), Etc., designate pumping plants to be conveyed to District.

Ditches to be conveyed to District.

EXHIBIT "B"

SUPPLEMENTAL AGREEMENT

BETWEEN

ROOSEVELT IRRIGATION DISTRICT
AND
SALT RIVER VALLEY WATER USERS' ASSOCIATION

Consisting of
EIGHT PAGES

Listing 36 items as follows:

Page 1.	Items 1 to 6 inclusive,	Pumping	Plants	and	appurtenances		
Page 2.	" 7 to 12	"	"	"	"	"	
Page 3.	" 13 to 16	"	"	"	"	"	
Page 4.	" 17 to 19	"	"	"	"	"	
Page 5.	" 20 to 25	"	"	"	"	"	
Page 6.	Item 26						
Page 7.	Items a to j inclusive,	Ditches	for	carrying	pumped	water	
Page 8.	Map showing location of features comprising Items 1 to 26 and a to j inclusive.						

A P P E N D I X "A"

SUPPLEMENTAL AGREEMENT

BETWEEN

ROOSEVELT IRRIGATION DISTRICT

AND

SALT RIVER VALLEY WATER USERS' ASSOCIATION

DATED FEBRUARY 3, 1927.

All payments for power and water herein provided to be made shall become due and payable on September 1st and March 1st each year for all power and water furnished hereunder during the six months preceding.

12. It is covenanted and agreed that if the Company shall fail to advance the funds agreed to be advanced for the steam plant at the times provided in paragraph 10 of this agreement said Company shall at the option of the Association forfeit all property purchased from the Association, all work done installing pumps and equipments and rights-of-way therefore and all right under this contract and it is further covenanted and agreed that if said Company shall advance said funds for said steam plant as provided in paragraph 10 of this agreement, but shall fail to begin, proceed with or complete the construction of the pumps, wells and other works herein provided for at the rate or within the time, or times, herein provided, said Association may take over and complete the said work or portion of said work and shall charge the cost thereof to the Company, which cost the Company agrees to repay to the Association with interest at the rate of 7% per annum and if after said wells, pumps and other works shall have been installed, said Company shall fail to pump from said lands the said minimum amount of seventy thousand (70,000) acre feet per year, (unless such failure is due to the failure of the Association to furnish power) or if the Company shall fail, to pay any bill for power or water within sixty (60) days after the same shall be due or payable the Association may proceed to collect the amount so due or at its option shut off all supply of power and water until such bill is paid, and the Association may, at its option, upon the ex-

piration of ninety (90) days from due date of bill take over and assume the operation and management of said wells, pumps, canals, ditches and other instrumentalities, and may continue to operate and manage the same for its own purposes and without delivering the water produced thereby to the Company or the lands in said irrigation district until said bill is paid. And whenever said Company at any time within thirty-five (35) years from the date hereof shall remedy and correct said defects or omissions and shall pay the Association for the actual cost of pumping water not exceeding 70,000 acre feet per annum during such period of delinquency and said Association shall then turn back to said Company all said works and the control, operation and management thereof, upon the payment by the Company of all arrearages, due the Association for water and power, together with interest at the rate of seven per cent per annum.

13. The Company further covenants and agrees that all water received by it under this agreement shall be distributed and apportioned only in compliance with those provisions of the Act of Congress approved February 21, 1911, known as the "Warren Act" which limit the use of waters pumped from United States Reclamation Service Projects to 160 acres for any one land owner.

14. The electric power to be delivered will be three phase, 25 cycle, at approximately 11,000 volts.

15. The Company agrees to, at no expense to the Association, make necessary changes to the transmission lines lying within the area described in paragraph 20 hereof over which electric power for the Company will be transmitted, to

increase the carrying capacity of said lines to the extent of one-third more than the power required by the Company. The Company further agrees to construct at no expense to the Association any and all transmission lines necessary to transmit said electric power from the project lines to the point or points of use. Point or points of use shall be considered to be at the low side of the electric meter, which meter shall be placed on the high side of transformer at each installation for pumping. The reconstruction of the project lines and the construction of any and all transmission lines shall be in accordance with plans and specifications approved by and installed under the supervision of the Association. Upon completion of the said reconstruction and construction of transmission lines acceptable to the Association, they shall become the property of, and forever remain a part of the works of the Salt River Valley Water Users' Association, said transmission lines to be-come the property of the Salt River Valley Water Users' Association shall be considered to end at the point or points of use, as defined above.

One-third (1/3) of the monies expended by the Company in the reconstruction and construction of said transmission lines, as approved by the Association shall be refunded to the Company by allowing a credit on all money due the Association from the Company for the sale of electric power and delivery of water.

At all times during the progress of said construction of transmission lines and appurtenances, the Association shall have the right of access to the records and books of the Company for the purpose of determining the true cost and quality of

said construction, and the Company shall lend every assistance to the representatives of the Association for that purpose.

16. Neither party hereto shall be held responsible or liable for any failure, default or delay caused by war, strikes, acts of God, unavoidable accidents or contingencies beyond its control and not due to its fault, negligence or omission, but the cause thereof shall be removed with the utmost diligence.

17. The Association may, when necessary and without recompense to the Company suspend service for the purpose of making alterations or repairs upon giving to the Company twenty-four (24) hours notice and when such suspension is necessary the Association will use every reasonable effort to renew its service with the least possible delay.

18. All transmission lines, transformer installations, switching apparatus, lightning arresters and wiring, which shall be the property of the Company shall be constructed and installed according to plans acceptable to the Association and the Secretary of the Interior, and the operation and maintenance, during the term of this contract, of the above mentioned apparatus shall be conducted in a manner satisfactory to the representatives of the Association and the Secretary of the Interior. If any defects develop during the term of this agreement after the said equipment is installed of such a character as to interfer with the electric equipment of the Association on the Salt River Project, the representatives of the Association or the Secretary of the Interior may demand at any time that changes be made to eliminate such defects. The Association

shall have the right to cease furnishing energy until such changes are made. The Association may, if it so desires, enter upon the property of the Company and make the necessary changes above referred to and to charge any expense so incurred to the Company, and collect the same in the manner provided for the collection of power and water charges.

The remedies herein provided for the Association, in case of failure of the Company to comply with this agreement shall be cumulative, and not exclusive, and shall not prevent the enforcement of this agreement by appropriate action of the Courts.

19. This agreement shall not be assigned by the Company without the written consent of the Association first had and obtained, but the Association hereby agrees to consent to any assignment the Company may desire to make to any irrigation district formed and organized under the laws of the State of Arizona the territory within which can, in a feasible and practicable manner, such fact to be certified by a responsible and competent engineer approved by the General Superintendent and Chief Engineer of the Association, be irrigated by use of the water removed from said lands described in paragraph 20 hereof as herein provided.

20. The lands and district to be drained and unwatered by party of the first part by means of pumps, wells and ditches, as herein stated, are in Maricopa County, and located as follows:

Bounded on the north by the south line of sections Twenty-one (21) and Twenty-two (22) Town-

ship Three (3) North, Range One (1) East, and by Grand Avenue Highway; on the East by Grand Avenue Highway and a line running North and South through the middle of Townships One (1) and Two (2) North of Range Two (2) East from Grand Avenue Highway to the Northeast corner of Section Sixteen (16) in Township One (1) North of Range Two (2) East, and by the West line of said Section Sixteen (16), on the South by the Buckeye Road (so-called) along the North line of said Section Sixteen (16) and by the "Lower Buckeye Road" (so-called) from the Southwest corner of said Section Sixteen (16) to the Southwest corner of Section Eighteen (18) in Township One (1) North of Range One (1) East, and by the North line of the Northeast quarter of Section Twelve (12) in Township One (1) North of Range One (1) West; and on the West by the East line of Section Twelve (12) and Thirteen (13) and a line running North and South through the middle of Section One (1) in Township One (1) North of Range One (1) West; and by the Agua Fria and New Rivers. All of the above townships and ranges stated are North East and West of the Gila and Salt River Base and Meridian.

21. In addition to lands described in paragraph 20 hereof subject to the provision in paragraph 3 hereof, the Company shall have the first call at all times on the right to pump from any other lands within the following boundaries,

to-wit: Central Avenue on the East, Grand Avenue on the North, Agua Fria River on the West and Salt River on the South.

22. The Company agrees to keep its wells, pumps, equipment appurtenant thereto and canals ditches and rights-of-way, situated within the Salt River Project in a reasonably good state of repair, and if it fails to do so the Association shall have the right to do whatever may be necessary to make such repairs and charge the cost thereof to the Company and collect the same from the Company.

23. Nothing contained in this agreement shall be construed so as to give the Company or the proposed irrigation District herein provided for or the lands receiving the waters referred to in this agreement any right whatever in or to any of the water stored in the Roosevelt Reservoir or any of the natural flow or flood waters of the Salt or Verde Rivers or any of the water pumped or developed on the Salt River Project by the Association, it being understood that the rights of the Company or said irrigation district and the land included within the same shall be limited to the pumping rights and right to receive waste water herein expressly provided for.

24. Nothing herein contained shall be construed to limit the rights of the Association or any of its members or land owners to pump water for domestic purposes or for irrigation purposes upon lands within the boundaries of the reservoir district as defined by the Articles of Incorporation of the Association as amended in 1912 or now located under ditches of the Association through which water is being delivered East of New and the Agua Fria River.

This agreement is executed by the President and Secretary of the party of the second part by virtue of the authority conferred upon them by the Board of Governors at a meeting duly called and held on the 25th day of August, 1921, and by the President and Secretary of the party of the first part thereunto duly authorized by the resolutions of its Board of Directors duly adopted at a meeting of said Board lawfully held on the 25th day of August, 1921. It shall not become effective until it shall have been submitted to and approved by the Secretary of the Interior of the United States of America and when so approved it shall become effective as of the date of such approval.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed in their respective corporate names by their duly authorized officers the day and year first above written.

CARRICK AND MANGHAM AGUA FRIA LANDS
AND IRRIGATION COMPANY

By Frank J. Mangham (Sgd.)
President

By A. A. Carrick (Sgd.)
Secretary.

SALT RIVER VALLEY WATER USERS'
ASSOCIATION

By F. A. Reid (Sgd.)
President.

By F. C. Henshaw (Sgd.)
Secretary

Approved

C. C. Cragin (Sgd.)
Gen'l.Supt.and Chief Engr.

Approved as to Form:

J. L. Gust (Sgd.)
Legal Advisor.

Approved October 26, 1921.

E. C. Finney (Sgd.)
First Asst.Secty. of the Interior.

STATE OF ARIZONA)
) SS:
COUNTY OF MARICOPA)

I, F. C. Henshaw, Secretary of the Salt River Valley Water Users' Association, hereby certify that the attached and foregoing is a true, correct and complete copy of an agreement between Carrick and Mangham Agua Fria Lands and Irrigation Company and the said Association dated August 25, 1921.

F. C. Henshaw (Sgd.)
Secretary, S.R.V.W.U.Assn.

(S E A L)

THIS AGREEMENT made in triplicate this 25th day of August, 1921, by and between CARRICK & MANGHAM AGUA FRIA LANDS AND IRRIGATION COMPANY, a corporation organized and existing under the laws of the State of Arizona, having its office and principal place of business in the City of Phoenix, Arizona, its successors and assigns, party of the first part, hereinafter called COMPANY and SALT RIVER VALLEY WATER USERS' ASSOCIATION, a corporation organized and existing under the laws of the State of Arizona, its successors and assigns, party of the second part, hereinafter called ASSOCIATION.

WITNESSETH:

WHEREAS there lies within the boundaries of the so-called Salt River Project, in Maricopa County, State of Arizona, a large area of land (hereinafter in paragraph 20 more particularly described), which has become to a large and injurious extent, saturated with water and which it is desirable for the best interest of the Association and the settlers and land owners within said project to have drained and unwatered; and

WHEREAS there lies in close proximity to the lands included within said project an area of land approximately 35,000 acres which is without irrigation and which it is proposed by the Company to irrigate with water pumped from the lands within said project and from waste waters purchased from the Association; and

WHEREAS it is proposed to form said 35,000 acre tract into an irrigation district under the laws of the State of Arizona to which district this contract may be assigned and to irrigate said tract through the medium of said irrigation district, and to meet the cost of putting said waters on the lands of said

irrigation district and of such irrigation by the sale of irrigation district bond; and

WHEREAS, in order to insure the payment of said bonds and the irrigation of said lands within said irrigation or conservancy district, it is necessary that said Company and said irrigation district be assured of an adequate supply of water.

NOW, THEREFORE, the said parties hereto, in consideration of the stipulation, covenants and agreements herein provided to be kept and performed, do hereby stipulate, covenant and agree with each other as follows:

1. The Association does hereby, insofar as it can, grant and release to the Company the right to sink wells, unlimited in number and in depth, upon said lands described in paragraph 20 hereof and to equip said wells with pumps, casing, pipe and all other apparatus and equipment necessary for the efficient pumping of said wells, and to pump water therefrom and to own and convey the same from said wells to and upon the said lands within said proposed irrigation district.

2. The Association further grants and releases to the Company, insofar as it can, all waste and pumped waters that may flow to the end of canals, laterals or ditches of the Association or to the boundaries of the said Salt River Project within the area described in paragraph 20 hereof, which the Association cannot put to beneficial use within the present boundaries of the Reservoir District as defined by the Articles of Incorporation of the Association as amended in 1912 or under ditches of the Association through which water is now being delivered East of New River and Agua Fria River.

3. The Association further grants and releases to the Company insofar as it can the first call upon and the right to pump and use waters in other saturated areas within said project as described in paragraph 21 hereof to the extent only that the Company needs such waters and it can put same to beneficial use and grants and releases to the Company insofar as it can the right to drill wells and equip them with pumps and to pump said waters for use of the Company under same terms and conditions as herein provided for, the pumps and pumping plants to be installed by the Company upon said area described in said paragraph 20 hereof.

PROVIDED, that if the Company at any time desires to pump from the saturated area described in paragraph 21 it shall make written request showing location of wells, ditches, etc. Upon receipt of such request same shall be granted provided good faith has been shown by the Company in unwatering of lands described in paragraph 20. The right granted in this paragraph may be availed of by the Company at any time within 30 years from date hereof, provided, if at any time during the 30 year period aforesaid the Association finds it necessary to pump water for drainage purposes within the said area described in paragraph 21, the Company covenants and agrees to purchase such water as is pumped by the Association for such purposes not to exceed an amount of 15,000 acre feet per annum in excess of the hereinafter stipulated 70,000 acre feet minimum to be pumped upon same terms and conditions as provided for payment and delivery of waste water in paragraph 11 herein. Failure upon the part of the Company to purchase or pay for said water shall

operate to relieve the Association of any obligation to grant pumping privileges within the area described in paragraph 21 hereof.

4. The Association covenants and agrees that the rights herein granted to the Company shall be exclusive and that it will not, at any time, grant or release to any other party, any rights which it may be able to grant, to pump water from the said area described in said paragraph 20 or any rights whatsoever which will interfere with, or impair the rights granted and given to the Company.

5. The Association further covenants and agrees that it will furnish and sell to the Company and the Company agrees to purchase during a period of 99 years, all electric power which may be necessary for pumping water from any of the wells mentioned in this contract for the irrigation of 35,000 acres of land contemplated in this contract at the following rates, to-wit:

(a) For a period of 10 years from date hereof all hydro-electric energy shall be sold by the Association to the Company at 3/4¢ per KWH at points of use as defined herein. It is understood and agreed that the Hydro-electric power to be furnished under this contract shall be from the Association's present available supply and that when the same is not available the Association may supply power from other sources and that the Company will pay for same at cost in the same manner as provided in clause (b) hereafter.

(b) For the period beginning at the end of 10 years from date hereof and ending at the end of 30 years from date hereof, all electric energy shall be sold by the Association to

the Company at points of use as defined herein at the actual cost of said power to the Association. The term "actual cost" as used herein shall be construed to mean the cost of producing and delivering such energy under whatever system the Association may be operating at the time and shall include interest on the investment made by the Association or the United States of America, operation and maintenance and proper allowance for depreciation.

(c) At the expiration of 30 years from date hereof the rate to be paid for said energy shall be the fair market value for similar service.

6. The Association covenants and agrees to use its best endeavors to assist the Company in obtaining rights-of-way for canals, ditches and pumping plants and other works to be constructed, maintained and operated by the Company hereunder, and also in obtaining and securing the conveyance of the areas of land necessary for the location and maintenance of said pumping plants and other works, and to obtain for the Company, the right to pump waters from said area described in paragraph 20 hereof, provided, however, that no financial assistance shall be required from or is to be furnished by the Association for such purposes, and provided further that the Association shall be reimbursed by the Company for all reasonable expense incurred by the Association in approving plans, specifications and locations of wells and in rendering aid in securing rights-of-way and other conveyances.

7. The Association covenants and agrees to sell and the Company agrees to purchase all pumps, wells and equipment

appurtenant thereto which are owned by the Association situated on any of the lands within the limits described in paragraph 20 hereof. The price to be paid for such wells and pumping plants shall be the cost of a like installation at the time of purchase.

8. The Company covenants and agrees to purchase from the Association, or drill and properly equip with pumps and other apparatus, fifty (50) wells, and to build and construct such canals, ditches and other works as may be necessary for carrying out the provisions of this contract, including the necessary engineering work. Said engineering work so to be done by the Company shall be commenced immediately upon the execution of this contract and the installation or purchase of wells and pumps and the building of said canals, ditches and other works necessary for the operation thereof shall be completed within the period of eighteen (18) months thereafter. Said fifty (50) pumps shall be operated at all times after the expiration of said eighteen (18) months period continuously as far as practicable or sufficiently so to remove the minimum amount of water hereinafter provided. The period of six (6) months shall be allowed after the expiration of said eighteen (18) months period for determining whether or not any further installation of wells and pumps shall be necessary in order to remove from said lands the minimum amount of water herein prescribed, to-wit: 70,000 acre feet per annum, and if such additional installation is found necessary, a further period of six (6) months (during which all pumps theretofore installed shall be operated as provided hereinbefore for the fifty (50) pumps) shall then be allowed the Company in which to make such necessary additional installation. The rate of progress shall,

at all times, be such as to insure the completion of the work within the time herein limited and the whole of said installation in order to pump said minimum amount of water, to-wit: said 70,000 acre feet per annum shall be completed within thirty (30) months from the date hereof, provided that is any delays shall be caused by war, strikes, financial panics or any causes not due to any act or neglect of the Company (failure to organize an irrigation district or inability to sell its bonds for any cause whatever, shall not be considered a reason for delay, unless in the judgment of the Board of Governors of the Association such delay shall have been justifiable). The time lost by such delays herein provided for shall, upon written notice within thirty (30) days after the commencement thereof, be added to the time herein allowed. All plans and specifications for the work herein provided for and location of wells shall first be submitted to and approved by the Association, provided that no well shall be required to be placed where the right to install the same and the right-of-way for a ditch to carry the water produced thereby can not be reasonably obtained.

9. The Company further covenants and agrees to operate said pumps, wells, equipment for power, canals, ditches and other works constructed and installed by it, for the term of ninety-nine (99) years, --- the object of such operation being to pump and remove water from the area of land described in said paragraph 20 and to use said water to irrigate the said lands within the boundaries of the said irrigation district. Said Company does hereby undertake covenant and agree, in any event, to pump from said area described in said paragraph 20

hereof, water equivalent to seventy thousand (70,000) acre feet as a minimum during each calendar year following the completion of said work, provided, however, that the average depth of the underground water level over the entire area included within the limits described in paragraph 20 hereof shall not be lowered, without the consent of the Association, to a greater depth than 50 feet below the surface of such lands.

Provided further that the Company agrees it will operate all pumps purchased or installed by it an approximately equal number of hours during any one calendar year, whenever the Association shall so demand.

The provision for the drilling and equipment or purchase of said fifty (50) wells by the Company shall not be construed to limit or restrict the number of wells to be drilled and operated by the Company, but said requirement, it is understood and agreed, is merely a minimum requirement and said Company may drill, equip and operate as many wells within said area as it may desire.

10. The Company shall furnish the Association either as purchase price for wells, pumps and other equipment or as advances to be repaid in power furnished by the Association as hereinafter provided, a sum of money equal to the installed cost of a 5000 Horse Power capacity steam electric power plant, the money to be furnished in installments as hereinafter provided. This sum shall in no event exceed the sum of $600,000.00 unless purchases from the Association exceed the sum of $300,000.00 in which case the amount to be advanced shall be the cost of such equipment purchased plus $300,000.00, nor shall the said sum to

be advanced to the Association for said 5000 Horse Power steam plant be less than $300,000.00 exclusive of any sums paid to the Association for pumps, wells or other equipment. Said money shall be paid by the Company to the Association either as purchase price for wells, pumps and equipment appurtenant thereto or as advances under the terms hereof at the following times, time being of the essence to-wit:

$50,000.00 -- on or before six months after the effective date hereof.

100,000.00 -- on or before four months thereafter.

150,000.00 -- on or before two months thereafter.

Balance necessary to complete said plant on or before three months thereafter.

The Association covenants and agrees to repay so much of said cost of above mentioned steam electric power plant to the Company, which was advanced by the Company exclusive of any monies paid the Association for aforesaid wells, pumps or equipment appurtenant thereto, as follows: All sums becoming due and payable to the Association for power or water shall be applied to the repayment of monies advanced for (the) electric power plant and any other advances and expenditures as herein provided together with interest thereon at the rate of 7% per annum.

11. The Company covenants and agrees to pay the Association for all such waste and pumped water received by it hereunder as the Association may furnish and the Company can put to beneficial use from wells now installed or that may be installed by the Association within the area specified, the sum of seventy-five (75) cents per acre foot. The use of water for irrigation purposes shall be construed as beneficial use.

A P P E N D I X "B"

W A T E R C O N T R A C T

BETWEEN

THE CARRICK & MANGHAM AGUA FRIA LANDS
& IRRIGATION COMPANY

AND

SALT RIVER VALLEY WATER USERS' ASSOCIATION

AUGUST 25, 1921

INDEX

VOLUME I

	Page
Letter of Transmittal	--
General Statement	1
History of District--Organization and Purpose . . .	3
Description of District	3
Locale	4
Map Showing Location of Roosevelt Irrigation District	6
Area of District	7
Topography of District	8
Management--Personnel.	8
Landownership	11
Political Status of District	11
Status of District with Relation to Salt River Valley Water Users' Association	14
Mutual Benefits of Contracts	15
Amended Contract Applicable to District	15
Terms of Contracts	17
Comparative Power Costs	18
Physical Conditions of Project--Proposed Layout . .	19
Map Showing Proposed System - Roosevelt Irrigation District	21
Quantity and Quality of Water Available	22
Climate	23

Tabulation--Comparative Climatic Data of the Roosevelt Irrigation District and Southern California 24

Sociological Conditions 26

Schools and Churches 27

Railway Communication 27

Paved State Highways 29

Lateral or County Roads 30

Markets 30

Arizona Light and Power Company Service 31

Telephone 31

Map Showing Economic Features of Roosevelt Irrigation District 32

Land Development Program
Clearing and Leveling 33
Quality of Soils 33
Crops 34

Construction Periods 34

Estimated Costs and Proposed Bond Issues 35

Annual Charges per Acre 36

Land Values 37

Copy of Appraisal of Lands of the Roosevelt Irrigation District made by the Phoenix Real Estate Board 40

Reasonableness of Annual Charges 42

General Economic and Financial Conditions 44

Arizona Bank Statistics 45

Graph Showing Increase of Deposits in Arizona Banks 46

Crop Statistics 47

Map Compiled by Cambridge Associates Showing Crop Yields in 1926 as Compared with Average for Ten Years 49

Crop Production on Adjacent Irrigation Projects
Salt River Project 50
Tabulation--Crop Production 1925 - Salt River Project 51
Buckeye Project 52
Southwest Cotton Company's 17,000 Acre Ranch 53

Population Increase 53

Graph Showing Increase in Population of Phoenix . . . 54

Comparative Business Conditions 55

Maps of the United States for November 1, 1925 and November 1, 1926, showing the Reflection of Business Conditions 56

Conclusions 57

Appendex "A" -- Supplemental Agreement Between Roosevelt Irrigation District and Salt River Valley Water Users' Association--Dated February 3, 1927.

Appendex "B" -- Water Contract between The Carrick & Mangham Agua Fria Lands and Irrigation Company and Salt River Valley Water Users' Association--Dated August 25, 1921.

SAN FRANCISCO
908 BALBOA BLDG.
TELEPHONE DOUGLAS 1808

LOS ANGELES
1116 EDWARDS & WILDEY BLDG.
TELEPHONE VANDYKE 7150

THE LOVELAND ENGINEERS, INC.

HESTER H. LOVELAND
F. M. FAUDE
C. I. RHODES
M. E. READY
A. N. JOHNS
M. I. REED
L. A. WILLIAMSON
X. MARTIN SMITH
G. H. BENJAMIN

DESIGN
CONSTRUCTION
MANAGEMENT
ORGANIZATION
FINANCING
ACCOUNTING

SPECIAL REPORTS
PUBLIC UTILITIES COMMISSIONS
BOND HOUSES, BANKS

WATER SUPPLY
IRRIGATION
RECLAMATION
TELEPHONE
POWER
RAILROADS

SAN FRANCISCO OFFICE

February, 1927.

Board of Directors,
Roosevelt Irrigation District,
Phoenix, Arizona.

Gentlemen:

The accompanying report is Volume I of a series of four volumes which have been compiled in connection with the financing and construction of an irrigation system for the Roosevelt Irrigation District. The other three volumes deal specifically with individual engineering and technical phases, while in this report we have endeavored to set forth what may be termed the basic economic factors which are determinative of the success of the project. Accordingly the results and conclusions developed by the various technical engineering and agricultural investigations have been drawn together and analyzed and all economic phases relating to the feasibility of the project, such as water supply, climate, soils, transportation facilities, markets, etc., have been given consideration.

In order that the conclusions which are analyzed in more detail later herein may be readily available, the following brief summary is set out:

1.--Description of District

The Roosevelt Irrigation District was organized in 1923 and includes an area of 35,513.67 acres as of December 31, 1926. The owners of some 1,270 acres now outside the District have actually applied or are now about to apply for the admission of their lands within the District. The areaconsidered herein as being within the District is therefore 36,784 acres. The District lies within the Salt River Valley wherein is also contained the Salt River Project which has been developed by the U. S. Reclamation Bureau, and is one of the most prosperous and progressive agricultural enterprises in the Nation. The easterly boundary of the District is approximately fourteen miles west of Phoenix. Its topography is admirably adapted to irrigation.

2.--Management

The management of the project has been analyzed and is found to be in the hands of conservative successful business men who are also practical agriculturists and who have been successful in the operation of large areas of land similarly situated.

3.--Land Ownership

There are approximately 200 individual landowners within the District, consisting principally of successful land owners in near-by projects who are thoroughly familiar with local conditions and are financially able to rapidly develop their lands. Practically none of the land is held by speculators. The average holding in the District is 184 acres.

4.--Quantity and Quality of Water Supply

The District is assured of a plenteous water supply through contracts with the Salt River Valley Water Users' Association. The quantity is ample to supply water for the irrigation of a far greater area than is contained within the District boundaries. Water will be obtained from an underground reservoir, and as to quality it would appear sufficient to state that it has been used successfully for irrigation for a long period of years in certain portions of the Salt River project, and